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UNIVERSITY OF ALBERTA

WOMEN'S EDUCATION, FERTILITY, CHILD MORTALITY AND LABOUR FORCE PARTICIPATION : A THIRD WORLD PERSPECTIVE

BY

GULSHAN K. MERCHANT

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN

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DEPARTMENT OF EDUCATIONAL FOUNDATIONS

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Women's Education, Fertility, Child Mortality and Labour Force Participation: A Third World Perspective" submitted by Gulshan K. Merchant in partial fulfillment of the requirements for the degree of Doctor of Philosophy in International and Intercultural Education.

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DEDICATION

To

My late father
Mr. Kassamali Ebrahim whose dream of giving highest education to me has been fulfilled with the completion of this thesis

To

Women of Northern Areas of Pakistan and all the respondents of this study, whose constant struggle to acquire education and to improve their status in the family and the rural society

ABSTRACT

In recent years the question of women's education and its impact on the quality of their lives and that of their families has drawn greater attention from social scientists, political economists and educators, especially those in developing countries. Inspired by the fact that women constitute half of human resources, are responsible for more than half of world food production, make up more than two thirds of the labour force – both in paid and unpaid labour – but receive minimum economic benefits and unequal access to educational institutions, this dissertation examines the impact of education on various aspects of women's lives in the Gilgit Agency in the Northern Areas of Pakistan.

The area selected for this study is in the isolated valleys located in the midst of the highest mountain ranges–the Karakoram, Pamir, Hindukush and Himalayas–of the world, where rapid modernization and economic development are underway. Women's access to education in this area has increased in the last three decades. Both these factors, improvements in the economic and educational fields, have had a significant impact on women's individual development and their contribution to the process of development of the rural society in which they live. Given a favorable milieu and realistic approach to development, women's education can help to bring about needed social changes. Therefore, the specific impact of education on women is explored as it affects women's fertility patterns and child mortality, their individual attitudes towards family planning and family size; and their participation in the labour force as paid workers and unpaid family farmers and traders.

Two factors–slow economic growth and rapid population increase–hinder the pace of national development in many developing nations and these were issues of concern to this study. An examination of the results and analysis of data indicate a decline in fertility and child mortality, and an increase in paid labour force participation, all of which are the outcomes of increased women's education. The central argument in this dissertation is that the education of women is pivotal in the rural development of Gilgit Agency, both to accelerate the pace of economic growth and to control population increase. Therefore it merits precedence in the policy planning for economic development.

In terms of women's access to education and training, the study reveals that women have limited accessibility to secondary and higher education institutions compared to men. The majority of girls in the area who enter into primary education eventually become unpaid family worker. In light of the results in this study it has been recommended that accessibility and availability of middle and secondary schooling for women should be one of the priority goals of education.

Secondly, to improve the productivity and income in the traditional sector of the economy, a program of non-formal education in the form of agriculture extension training should be provided especially to female primary school leavers. Moreover, at the community level adult education and functional literacy program should be given priority as an improved literacy level in the general population tends to improve economic growth and reduce population growth.

The study concludes by noting the need for a greater involvement of women in the process of rural development and that education is an important ingredient in this process, both as a means of enhancing women's individual development and the development of the future generation and that of a society as a whole.

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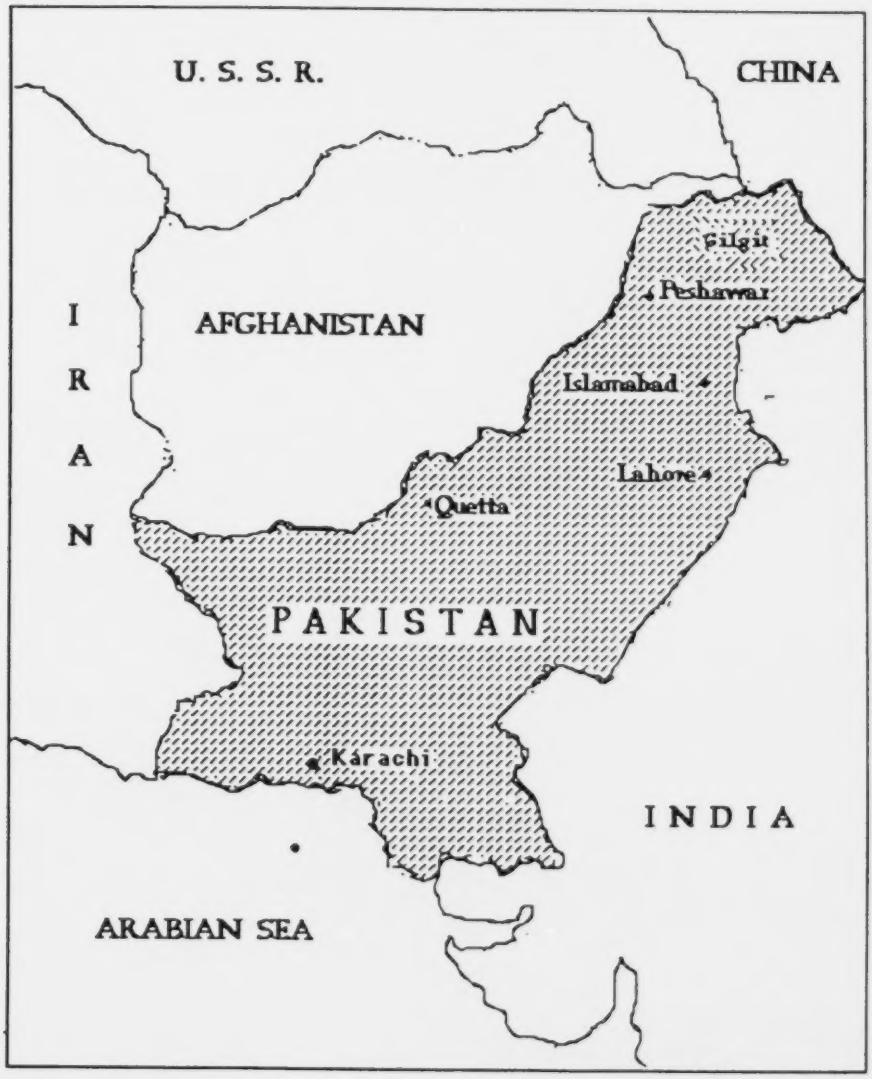
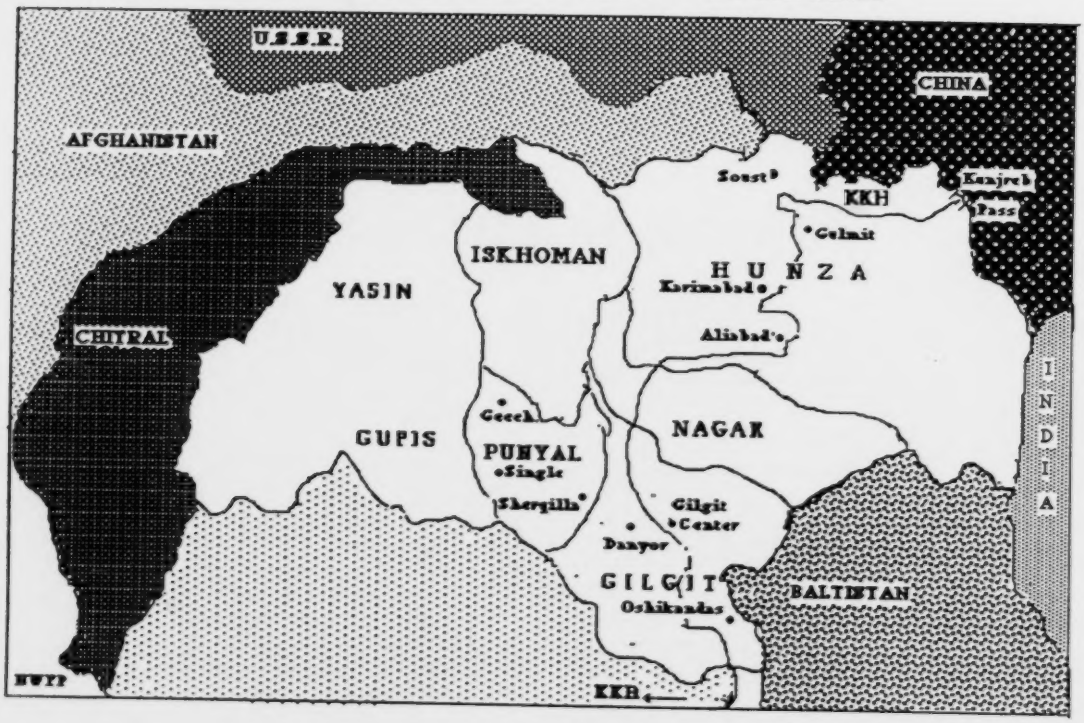
MAP OF PAKISTAN



MAP OF THE NORTHERN AREAS AND THE GILGIT AGENCY



CHITRAL(NWFP)

BALTISTAN

FEDERAL AREAS

THE GILGIT AGENCY

AFGHANISTAN

U.S.S.R.

CHINA

India

KKH KARAKORAM HIGH WAY

1. INTRODUCTION

The inhabitants of the developing countries, especially in the Asian region, comprise the vast majority of the world's population. Rapid population growth has occurred in developing countries since the Second World war, increasing from 2620 million in 1970 to 3788 million in 1987. In South Asia alone, which now has some of the most densely populated areas of the world, the population increased from 2079 million in 1970 to 2905 in 1987 (Unesco, 1989: 1-7).

Women make up half the population of the world. Over 70% of the world's female population lives in less developed countries (LDCs), of whom more than fifty percent are in the rural areas. In Pakistan for example, of the total population of 48 million women in 1985, 73% lived in the rural areas. Similarly, 79% of the 363 million women in India lived in the rural areas (Sivard, 1985: 35).

Of even greater importance than the sheer numbers of rural women is the fact that the vast majority of them constitute the world's "poorest of the poor" and the quality of their life is normally quite inferior to that of their counterparts dwelling in the urban areas. Most of these rural women are illiterate. For example, over 75% of all adult women in South Asia, the Middle East, and North Africa are illiterate (Seager and Olson, 1986: 23-24). In addition, they are engaged mainly in agriculture, and are basically concerned with sheer survival.

In the Third World countries, rural women are responsible for more than half of the food produced. As a rule, women work longer hours than men, often working an average of 18 hours per day (Sivard 1985: 23-24). Similarly, reporting on the state of women in the world, Mrs. Helvi Sipila, Assistant Secretary-General for Social Development and Humanitarian Affairs of the United Nations (1986) observed that,

> women and girls, who constitute half the world's population and one third of the official labour force, performed nearly two thirds of work hours, . . . but receive only one tenth of the world's income and owned less than one hundredth of the world's property.

The development of any society cannot be achieved if any effort misses half the people involved. .Any activity so geared will fail to realize its potential. In the last thirty years, development programs in the Third World nations have not been as successful as they should have been and one of the reasons for this is the failure to educate women to achieve their full potential and participate more effectively in the process of development.

Thus, "no matter how desirable we find such international objectives as 'Health for all by the year 2000,' or 'the International Year of Shelter scheduled for the year 1987, or 'the Concept of Universal Primary Education,' these will not be achieved--nor even be approached--if the world's rural population *(including women who constitute half of this population)* do not participate in them" (Aga Khan, 1983: 5, emphasis added). The core problems of widespread poverty, growing inequality, rapid population growth, and rising unemployment all find their origin in the stagnation and often in the retrogression of economic life in rural areas (Todaro, 1981: 22). If economic stagnation is to be reversed and the process of development is to take place, then development has to start in the rural areas with emphasis on involving rural women. It is therefore quite obvious that it is in the improvement in the lives of these women that the battle for the long-term development of the world will be won or lost.

Perspectives on Women And Development

> The full participation of women in development directly involves half the available human resources, holds out the greatest opportunities for breakthrough in many sectors, and offers the key to the development dilemma. It is painfully obvious that too often women have been--and are being--left out of development (Monique Vezina, Minister of External Relations, CIDA, 1986).

"Women hold up half the sky," states a Chinese proverb, but a closer look at the situation of women shows that they bear significantly more than half the burden of underdevelopment. However, it is ironic that only since the launching of the International Women's Year in 1975 and the announcement of the International Women's Decade in 1976 have people

begun to recognize the importance of women in the development process, and the need for action to improve the conditions of women and promote gender equality. For example, although equal rights for men and women were referred to in the United Nations' charter for "Human Rights" as early as 1948 and the General Assembly's declaration on "the Elimination of Discrimination Against Women" in 1967, the first explicit reference to women and development did not appear until 1970 (Joekes, 1987). It was only in 1972 that the United Nations declared that,

> . . . the full and complete development of a country, the welfare of the world and the cause of peace requires the maximum participation of women in equal terms with men in all fields (United Nations, 1972: 5).

In the same year, the General Assembly of the United Nations adopted the Second International Development Decade document which stated that, "the full integration of women in the total development effort should be encouraged" (United Nations, 1972).

In 1974, the United Nations' conference on the "World Population Plan of Action" recognized that women should begin to move towards a position of equality with men in domestic life and in national and international affairs. One of the development goals agreed upon, at the above conference held at Bucharest, states:

> The full integration of women into the development process, particularly by means of their greater participation in educational, social, economic and political opportunities, and especially in the non-agricultural sector wherever possible should be encouraged. In this context, national laws and policies, as well as relevant international recommendations, should be reviewed in order to eliminate discriminations in, and remove obstacle to, the education, training, employment and career advancement opportunities for women (United Nations, 1975b: Paragraph 32).

Following the above declarations, various reports and recommendations dealing with the status and rights of women in political, economic, and social fields have been presented at United Nations' meetings and conferences. The most significant outcome of these declarations was the proclamation of the year 1975 as the International Women's Year and the decade 1976-1985 as the International Decade for Women: Equity, Development and Peace. These measures were landmarks for women's development.

The World Conference on the International Women's Year was held in Mexico City in 1975, and this conference was followed by various other world conferences on related themes which led to increasing attention being focussed on the role of women in the process of development. The general aim set out by the world conference for the International Women's Year was:

> To define a society in which women participate in a real and full sense in economic, social and political life and to devise strategies whereby such societies could develop(United Nations, 1976: 7).

This conference also formulated a number of objectives for the attainment of gender equality, which included equal rights with men in social, economic and political spheres, education, employment, wealth, legislation, marriage, and family life. It also dealt with the social problems faced by rural women. This conference linked for the first time, the role of women on a global scale to current social, economic, political, and development issues.

Following the First United Nations Conference on Women in 1975 and the declaration of the United Nations' International Decade for Women in 1976, two conferences were held in order to assess the progress made by women throughout the world. First a Mid-Decade conference was organized in Copenhagen (July 14-30,1980), while the other was scheduled at the end of the Decade for Women, in Nairobi (July 15-20,1985). The Mid-Decade conference confirmed the growing importance of a new global approach to women's issues and re-asserted the need to provide opportunities in national planning and policies for the education, employment, and health sectors (United Nations, 1980).

The Nairobi conference reasserted the fact that women were participants and agents of development rather than mere beneficiaries (or victims) of the process of development. This conference also reviewed the achievements of the Decade for Women and the result indicated that while substantial progress was made in education and health care, women however, were not significantly better off in the employment sector (United Nations, 1985a).

In addition to these meetings, several world conferences on other topics began to devote increasing attention to the role of women in the process of development. These included the United Nations Conference on Human Settlement (United Nations,1976); the Tripartite World Conference on Employment, Income Distribution and Social Progress, and the International Division of Labour (ILO, 1976); the United Nations' Conference on Desertification (United Nations, 1977); the World Conference on Agrarian Reform and Rural Development (United Nations, 1979) and the United Nations' Conference on New and Renewable Sources of Energy (United Nations, 1981a) Recognition of the importance of women's role in the process of development is thus a recent phenomenon.

The Development Dialogue

There have been few concepts in social and economic thought which have been as ambiguous as the concept of development. "Development" has been used in a variety of contexts which are often clouded with ideological, political, and economic overtones. There are many terms which are considered to be synonymous with "development", such as "social change," "growth," "evolution," "progress," "advancement," and "industrialization." Therefore, it is essential to examine the general meaning of the term "development" in different contexts before applying it to women.

In its most common usage, "development" refers to changes which are associated with growth, adaptation, and progress (ILO, 1977: 4). The New Oxford Dictionary explains the infinitive "to develop" as meaning to unfold, to reveal, to come from latent to active, or as a visible state; whereas the term "development" means "gradual unfolding" or "progression" (Sykes, 1976: 262). This meaning is associated with physical growth which implies a self-generating process and change.

The term "development" also means "actualization" of an implicit potentiality (Fletcher, 1976: 43). It is this implicit logic of development--actualization of potentiality--as observed by Fagerlind and Saha, that is particularly appropriate in understanding and planning for change in human societies. They argue that, "any change that promotes or actualizes innate biological, psychological, and sociological dimensions of society represents development in the true meaning of the term" (Fagerlind and Saha, 1983: 5).

The definitions of the term "development" as it refers to the process of change in developing countries are many and diverse. In the literature of economics of education and development, two major aspects of development have emerged since the World War II. First, the term "development" was popularized by modernization theorists as meaning economic growth characterized by an increase in the Gross National Product (GNP), industrialization, high technology, high consumption, and changes in social and political institutions (Todaro, 1981: 93).

This approach to development had its origin in the theory of "stages of economic growth" formulated by Rostow (1960), in which the process of development was seen as a series of successive stages through which all societies must pass. Western economists, and those from developing countries trained by them and who experienced rapid post-war reconstruction of Western Europe's economies supported by the Marshall Plan, considered this neoclassical model of development just as appropriate for generating increases in the gross national product and the national income of LDCs. Viewed from this perspective, development becomes synonymous with economic growth and industrialization.

In strictly economic terms "development" of a country, as per United Nations growth index, is generally measured through the attainment of a 6% annual target growth of per capita GNP and through the rate of urban industrialization. Achievements in other non-economic social indicators such as gains in literacy, schooling, health conditions and services, and provision of housing facilities have been considered secondary to economic indicators of development.

On the whole, development in the 1950s and 1960s was seen purely as an economic phenomenon, in which rapid gains in overall per capita GNP growth were expected to trickle down to the masses in the form of jobs and other economic opportunities or were expected to create necessary conditions

for the wider distribution of economic and social benefits of growth (Todaro, 1989: 87). This concept of development was adopted by almost all the newly independent nations of the Third World in the early 1960s.

By the 1970s, a large number of developing countries had experienced an overall increase in their GNP. However, they failed to attain development in the sense of widespread and significant improvement for their population (Higgins, 1977: 99-100). On the contrary, unemployment grew, inflation accelerated, the number of malnourished people increased, more children were out of school, health services reached only a minority of the people, and inequality of income distribution was as pervasive as ever. As a consequence, the prevailing definition of the term "development" came under increasing attack which shook its credibility (Seers, 1979a).

In the late 1960s dependency theory critics stated that it is the international system of rich and poor countries which creates and maintains the underdevelopment of poor countries. This relationship is also reflected internally among the rich and poor sections of the population within the country. Limitations identified by these theorists of the modernization model of development paved the way for the search for a new definition for the term development.

In the 1970s, the simplistic and specialized definition of the term "development" was redefined to include the reduction or elimination of poverty, inequality, and unemployment within the context of a growing economy. For example, Myrdal (1974: 84) has defined development as "the movement upwards of the entire social system" which embraces both economic and non-economic factors.

Further, some writers have stressed quality of life as the principal criterion of development: "the provision of a decent life not for some but for all" (Cassen, 1976: 821), "helping men to live and have life more abundantly" (Miller, 1974: 87-88), or "the perceived improvement in the quality of life, even where this means fewer goods and services" (Pitt, 1976: 8-9).

Thus, the second concept of development came into existence since the 1970s, and depicted development as a multidimensional process involving major changes in social structure, popular attitudes, and national institutions as well as the acceleration of economic growth, the reduction of inequality, and the eradication of absolute poverty (Todaro, 1989: 88).

The concept of development thus took on overtones of social change through equitable distribution of assets and income through social, economic, and political reforms such as land reforms, equal access to educational and training facilities and the provision of social services in terms of housing, safe water supplies, environment and sanitation. Any country failing to achieve such social changes would fail to develop (Seers, 1979a). In this sense, development means the process whereby the human condition is improved.

The model of modernization and development measured in terms of gross national product was discarded in favour of a combined attack on the economic and social roots of rural poverty through a basic needs approach advocated by the United Nations. The attack integrated a more community-based approach to rural development. Since then, it has been recognized in many developing countries that if national development is to be achieved, it needs to be based on developing rural areas and rural people. It is now a widely accepted fact that rural people, including women have an important role to play in the future progress and prosperity of most developing nations.

Development seen in an ideological sense is considered to be a virtue in itself. It is defined as an advancement from less satisfying, less peaceful stages of being to higher and more satisfying and emancipating conditions (Goulet, 1968: 387). Development in this sense means an achievement that not only uplifts a man (or woman) materially, but also culturally and psychologically (Ishumi, 1976: 5).

In addition, development also means changes in individuals' values, attitudes, aspirations, expectations and relationships. In this context, development fosters values of self-reliance, self-realization, and self-mobilisation which may change an individual's attitude toward education, toward society and toward the world at large. It also encourages the individual to learn, to improve his or her skills and to make him or her more autonomous in decision-making. Development, thus involves people. It affects their way of life and is influenced by their conception of the good life as determined by their culture (Hettne, 1984).

However, models of development of the 1950s and 1960s--modernization, human capital, and dependency and underdevelopment--failed to include the majority of the human race, women, and particularly rural women until 1970. Most development strategies neglected the female population. Youssef (1976: 70) notes,

> The real purpose of development is to make people better off. It is only when women are fully utilized that they will be able to develop their total potential and make their maximum contribution to society.

Women's Role in Economic Development.

The phrase "women and development" is a recent phenomenon, mainly stimulated by the publication of Ester Boserup's (1970) work.Women, Boserup points out, traditionally constitute productive labour in agriculture in much of the Third World; and she argues that as modernization occurs women are removed from productive activities. In her view,

> a single technological change in farming could entail a radical shift in sex roles in agriculture, widening the gap between the productivity and income of men and women and such a development would have the unavoidable effect of enhancing the prestige of men and lowering the status of women.(Boserup, 1970: 56).

Since then there has been a proliferation of policy pronouncements, research projects and publicity brochures designed to promote an awareness of and a concern for the impact of development planning on women's lives.

This relatively new interest in women's development has been reflected in the far-reaching changes that have taken place since 1970 in the form of feminist movements in industrialized countries which subsequently have been gradually extending to developing countries. Thus, as previously suggested, this can be seen in the designation by the United Nations of 1975 as the International Women's Year followed by the Decade (1976-85) for Women's Equity, Peace and Development, which tried to bring women's issues to the attention of international community and funding agencies. Changes have also been noted in educational opportunities for girls, female participation in the labour force, and women's choices regarding family size. These events have been called "The Women's Revolution". Asserting the importance of women's role in the process of development and planning Charlton (1984: 2) observes,

> Anyone who attempts to rethink what happens in development and why, or to understand simply what the word development means, can ill afford to ignore the majority of the human race.

This phenomenon has added an additional dimension to the concerns of those involved in development and has had an important impact on women's lives.

In light of the above explanations, it is obvious that the term "development" in essence involves a series of changes by which an entire social system moves away from a condition of life widely perceived as unsatisfactory toward a situation or condition of life regarded as being materially and spiritually better (Todaro, 1981: 96). In the final analysis, the ultimate goal of development is to provide all men and women with the opportunity to live fuller human lives, moving towards better and more humane conditions (Merchant, 1986: 6). This is also reflected in the United Nations' resolution made in 1970 that, ". . .the ultimate purpose of development is to provide increasing opportunities to all people for a better life" (United Nations, 1971: 41). It is within this context that the term development is associated with women in this study.

Education and Development: A Theoretical Framework

Education, especially formal education, has long been considered to have a tremendous capacity to promote rapid economic development. It was considered as an essential component in the process of development, because of the assumption that the educated population contributes to the socio-economic development of society as a whole and contributes to the well-being of individuals within the society (Schultz, 1961). The role of education in developing societies has been to equalize opportunities between social classes, to facilitate equal distribution of income, to develop a more employable labour force, and subsequently to generate employment for all (Carnoy, 1977).

It is from this perspective that most developing countries recognize education as a central element in national development and place much of their faith for improving the living conditions of their masses on the

expansion of formal education. Ishumi (1976: 4), in explaining the relationship between education and development observed:

> Education, development and planning are inseparable ingredients for an integrated health of a nation. Without education there is no development, without development there can be no further national progress and without careful national planning education and development as a national asset and motivational goals are inadequate.

The relationship between education and development originated in the late 1950s. .The theoretical framework most responsible for the relationship between education and development came to be known as "Human Capital Theory." During the post-war period, when Human Capital Theory was at its zenith, two factors made education the most essential component in the process of development: first, the application of "Human Capital" or "Human Resource Development" theory to education, to increase the economic growth; and second, the concept of "Human Rights."

Human Capital theory rests on the assumption that formal education is highly instrumental and even necessary to improve the production capacity of a population. In accordance with this assumption, it was suggested that continued economic growth in developing countries would be dependent primarily upon human resources and human power rather than on the more traditional economic input of ordinary labour and physical capital. It was an American economist, Theodore Schultz, who first postulated the theory, which shifted the traditional concept of economic growth related to the accumulation of physical capital to economic growth related to human capital. He argued that education must not be conceived as a form of consumption but as a productive investment (Schultz, 1961: 19). Apart from improving individual choices, education also ensures the equalization of the labour force required for industrial development and economic growth.

Human capital theorists, for example, view workers as "holders of capital" who have the capacity to invest education by virtue of skill they acquire through education (Karabel and Halsey, 1977: 13). To them, the

provision of education was not a form of consumption but a productive investment in society's stock of human capital. One source of evidence of the importance of human capital is that social rates of return on educational investment are greater than the traditional yardstick of 10 percent (Psacharopoulos and Woodhall, 1985).

The main contribution of education to economic growth "was to increase the level of cognitive skills possessed by the work force and consequently to improve their marginal productivity" (Benavot 1989: 15). Benavot further noted that "basic literacy and numeracy augment the productivity of workers in low-skill occupations; instruction that demands logical or analytical reasoning or provides technical and specialized knowledge increases the productivity of workers in high-skill or professional positions. . . . Thus, in aggregate, the greater the provision of schooling, the greater the stock of human capital in society and the greater the increase in national productivity and economic growth" (Ibid).

Another theory that social scientists and economists formulated for the Third World's development was the "trickle down" theory of modernization. While human capital theorists emphasize how education increases the productivity and efficiency of workers, the modernization theorists focus on how education transforms individual values, beliefs, and behaviour. The modernization theorists such as Lewis (1954), Lerner (1958), McLelland (1961) and Inkeles and Smith (1974) argue that exposure to modernizing institutions such as schools, factories, and media, inculcate modern values and attitudes (i.e., openness to new ideas, willingness to plan, and a strong sense of social efficacy). The compounding effects of modernization according to these theorists, are a crucial factor in increasing and sustaining economic growth. For instance, Inkeles and Smith argue that the greater the number of people exposed to modernizing institutions such as schools, the greater the level of individual modernity attained by the population. Once a critical segment of the population changes in this way, the pace of societal modernization and economic development quickens (1974: 47). Thus educational expansion--through its effects on individual values and beliefs--sets into motion the necessary building blocks for a more productive workforce and for sustained economic growth (Halsey, Floud and Anderson, 1961; Peaslee, 1965; McLelland, 1966).

The human capital theorists of the 1960s such as Schultz, (1961), Harbison and Myers (1964), Blaug (1968), and Bowmen (1968) in conjunction with the modernization theorists assumed a direct relationship between improvements in the levels of education and an increase in the productivity of the labour force. Asserting this, Fagerlind and Saha (1983: 18) observe that, ". . . the most efficient path to the national development of any society lies in the improvement of its population, that is, its human capital".

Further, in expressing the importance of human resources in the economic development of a nation, Harbison (1973: 3) observes that,

> Human resources . . . constitute the ultimate basis for wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organizations, and carry forward national development. Clearly, a country which is unable to develop the skill and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else.

It was also argued that accelerated development was a function of the expansion of the supply of educated manpower which, in turn, depended on a broadening of access to a formal education system (Cheru, 1987).

Education was thus considered as an important component for the development of Third World nations because of the fact that the quality of the human resources constitute a crucial element in economic development and a poor, illiterate and unhealthy population can hardly possess an adequate motivation, which is one of the most potent factors in economic development (Mahotra, 1967).

The "human capital" theory not only suggests a high level of national development through educational expansion, but also a high level of the individual mobility. Investment in education or vocational training was expected to produce benefits both to the individual and to society. At the individual level, it was argued that educated people increase their chances of employment as well as their lifetime earnings. As a result, society as a whole benefits from the increased productivity of educated or well-trained workers (Woodhall, 1987).

Given the positive social returns of investment from education and the requirement of a whole range of professional expertise, most Third World nations have been led to believe, or have wanted to believe, that it is the rapid expansion of educational opportunities which is the basic key to national development. The more education, the more rapid the anticipated development (Todaro, 1981: 289-290). Therefore, with faith in human capital theory and manpower requirements, developing countries began to develop their formal education systems based on manpower techniques and the western models of schooling as a matter of highest priority.

These planned educational changes in the LDCs resulted in a massive increase in enrollment and public expenditure on education. For example, the aggregate increase in enrollment for developing countries from 1960-1980 were 142%, 358% and 523% at the primary, secondary and tertiary levels respectively. However, the total enrollment growth increase in Africa, South Asia, and Latin America was 259%, 163% and 182% during the same period respectively (Coombs, 1985: 99). This phenomenal growth is termed a "world educational revolution" by John Meyer and his associates (1977).

These massive increases in school enrollment were coupled with tremendous increases in public expenditure on education in all developing countries. In Asia, the total public expenditure on education tripled in the 1960s, while in Africa and Latin America it more than doubled. By the end of the 1970s, the educational budgets in many Third World countries were absorbing about 85% of total government expenditure (Todaro, 1981). The world-wide trend in public expenditure on education from 1970-79 shows an increase in expenditure in Africa, Asia, and the Caribbean and Latin America from 2.5, 4.5 and 5.5 billion US$ in 1970 to 12.8, 27 and 25.8 billions respectively in 1979 (Coombs,1985: 99). A disproportionate share of these expenditures, however, was allocated to higher levels of education. While 76.5% of the total school enrollment was in primary school, this level of schooling was receiving only 48% of the total budget; the 17% being spent on higher education was disproportionately high, as only 2.8% of the students were enrolled at this level (Simmon, 1980: 30).

The picture of educational development in the Third World since the 1950s shows some very positive features in regard to educational institutions. Although women in developing countries have gained increased access to education at all levels, with regard to equal access to education they are firmly

disadvantaged. The expansion of schooling generally favours boys first, with girls closing the gap behind but never fully achieving parity. Because of population pressure and underdevelopment, most developing countries have failed to meet the demand for educational facilities. This problem particularly affects equal education for women (Todaro 1981).

Numerous studies conducted on this subject across the Third World have shown gender differences in educational opportunities, regional disparities in access to education for girls, and stereotyped curriculum content and options for girls (Chabaud, 1979; Dupont, 1979; Weiss, 1979; Smock, 1981; Kelly and Elliott, 1982; Levine, 1982; Bowman and Anderson, 1982; Jayaweera, 1987; Kelly, 1984 and 1987; Anker et al, 1984). All the above factors combined with population growth and the lack of educational facilities hampered the access of females to education and precluded them from reaping the same benefits from education as men.

Educating Women for Development

> A nation's march towards progress and prosperity will only remain a dream, its aspiration unfulfilled and unrealized, till women actively participate in all the development activities of that country. To emphasize the importance of women's education in this context is to emphasize the obvious.(Sharma, 1988:1).

One of the most significant twentieth-century developments in education has been its gradual institutionalization in the developing countries, especially for girls and young women. The number of women being educated and the amount of education they receive have both expanded markedly since the 1950s. This is evident from two sets of statistics. First, female enrollment at all levels of the education system increased during 1960-1975. For example, at the primary level enrollment increased from 38.9% of the female population to 42.6%, while at the secondary and tertiary levels their enrollment rose from 23.3% and 2.3% to 35.6% and 33% respectively (Caron and Ngog, 1980: 9). Secondly, in developing countries there were 300 million more girls in school in 1985 than in 1950 (Sivard, 1985).

This has been partly the outcome of an overall increase of investment in education and training in developing countries since the 1950s. For example, the proportion of public expenditure on education and training in developing countries now exceeds the ratio of similar expenditure in industrialized countries (Psachropoulos, 1987: 121).

However, despite the gain in female enrollment rates and the increase in the public expenditure on education and training, women--particularly rural women, as a group--have not benefited proportionally from this educational expansion or from the resulting economic growth. Kelly and Elliott (1982: 1) in asserting this state,

> Fewer females than males enter educational programs, be they formal or non-formal; fewer receive technical and vocational training; and women account for a very small proportion of enrollment in post-secondary education.

The gender differences in educational opportunities continue to exist in most developing countries. This can be seen from the fact that the number of girls without schooling and the number of illiterate women will increase in absolute terms by the end of this century. For instance, in South Asia nearly half of the girls between six and eleven years of age are not in schools (Jayaweera, 1987: 458). Further, the proportion of out-of-school girls in some South Asian countries is over 60 to 80%; girls' enrollment at the primary level in 1980 was 18% in Nepal, 32% in Pakistan and 31% in Bhutan.

Except for a few countries (such as Jamaica, Lesotho and Sri Lanka), women have a lower literacy than men; in developing countries. For example, except in Latin America and the Caribbean female illiterates were 21% more than men (Unesco, 1988: 9). Moreover, according to Unesco reports, the proportion of illiterates who are women is increasing. In 1960, 58 percent of adult illiterates were women, by 1970 this proportion had increased to 60 percent, and by 1985 it had reached 63 percent. The comparison of literacy statistics from 1960-1985 reveal that of 154 million new illiterates during that period, 133 million were women.

Further, an increased expenditure on education in developing countries was partly the result of the belief that investment in human capital would promote economic growth. However, this higher investment and

resulting economic growth has had an adverse effect on the relative position of rural women in many developing countries. According to Shields (1987: 121) the major factor contributing to this adverse situation is the

> limited access to education for women due to various institutional factors within the society and family that have contrived to exclude the majority of women from participating in educational opportunities.

In order to explain the extent to which above factors--lack of education and training and the process of modernization and economic growth--have hampered women's development, it is essential to give some illustrations:

First, in the traditional farming sector and in agricultural economies, modernization of production has generally left women's productivity and income levels behind, since in all these countries agricultural training at the lower, middle and higher levels is given mainly to men. The failure to teach modern farming methods to women results in low productivity in many African and Asian nations, where women account for a large share of the labour force in subsistence farming (Boserup, 1970; UNDP-Boserup and Liljencrantz, 1975; Dauber and Cain, 1981).

Writing about the impact of modernization, Margaret Mead (1976) noted that where traditional agricultural conditions prevail, women are still the principal producers of food; where technical change is occurring, however, women are being displaced by machines, which the prevalent belief is only men can operate. Consequently, with agricultural development, women are being converted from producers of food to consumers only.

Further, Palmer (1977), drawing on evidence mainly from Africa, found that agricultural mechanization tends to increase the workload of women where such mechanization involves both additional labour-intensive work and high productivity work, since women are usually relegated to the former and excluded from the latter. Reporting on the Nemow project's impact on women Palmer (1979: 78) further concluded that, "the principal lesson of the Nemow Project is that many of the weaknesses in the performance of production, income distribution, education, health and nutrition can be traced back to women's lack of access to resources in their own right."

The introduction of mechanization in the modern sector of economies has in general produced similar results. Technological progress has had a dual effect on women's employment opportunities: at the same time because of the lack of appropriate training and skills technological progress has pushed them into less skilled and less mechanized low paid jobs. For example, the ILO's preliminary survey on the impact of scientific and technological progress on the employment and conditions of work of women in selected industries, taken as early as 1967 (ILO, cf. Dauber and Cain, 1981: 41), confirmed that,

> when a new machine is installed, the tendency on the whole was to substitute male workers for women workers and keep women workers on the older and non-automatic machinery.

Today, in newer industries such as electronics, the dynamics of technical change continually displace women relegating them into low skill occupations.

Moreover, there is a substantial wage gap between men and women. According to the ILO report (1982) "no country in the world has reached parity in wages between men and women." For example, in the manufacturing industry in 1982, women earned 73 cents for every dollar earned by men doing similar jobs. This inequality in earning is mainly attributed to the fact that women cluster around lower paying occupations because of a lower education and a lack of professional skills. To achieve economic development it is important to educate women and provide them with skills which will be functional both in the traditional and modern sectors of the economy.

The literature concerning the impact of education on various aspects of women's development generally reveals a widespread belief that education is a powerful instrument which exerts a significant influence on both women's individual development and the development of their societies. The participation of women in national development is seen to be closely linked to greater equality in choices and opportunities for education, training, and employment. Further, access to education and training is a fundamental right recognized by many international agencies and at the same time a key

factor in social progress which can help to reduce disparities between social groups and between the sexes (Dupont, 1981: 9).

Most scholars of population studies believe that rapid population growth has negative consequences for economic development (Coale and Hoover, 1958; National Academy for Science, 1971). The literature dealing with education and population growth also indicates that women's education has a more direct effect on fertility patterns than men's education (Cochrane, 1979; Smock, 1981; Levine, 1982; United Nations, 1983). In addition, it has been suggested in the demographic, social science, and health science literature that the lack of education among women may have a negative impact on infant mortality rates and patterns of maternal bebaviour which significantly influence the development of the future generation.

Many economic and sociological theories predict that education increases women's participation in the labour force. This prediction is based on the general notion that education favorably affects women's willingness and ability to enter the labour market. Demographic theories also provide a rationale for the applicability of this prediction to less developed countries. It is asserted that increased schooling for females raises their potential earning power and thus provides them with a strong motivation to seek employment. Increased schooling also provides them with the necessary skills and credentials for employment in many jobs (Ram, 1982; Standing, 1981).

It is evident from the preceding discussion that the education of women plays a significant role not only in developing this hitherto neglected fifty percent of the available human capital, but also affects the rate of economic growth and has an influence on controlling population growth. Levels of economic and population growth are two major factors hindering the process of development in Third World nations. Hence, educating women in developing countries may be one way of assuring economic development of the nation and improving the quality of life of general population.

Organization of the study

The dissertation is organized in seven major chapters as follows:

Chapter 1:"Introduction" describes international perspectives about the issue of women's roles in the process of development and the impact of development on women's lives in the Third World. The chapter also reviews the relationship between education and development as well as the question of educating women for development. The chapter ends with the organization of the study.

Chapter 2:"Literature Review" examines how academic research on the topic of women, education, and development has evolved since the 1950s. The chapter is also designed to review major empirical studies on the topics of the relationship between women's education and fertility patterns, child mortality rates and female labour force participation.

Chapter 3:"Background to the Project Area" describes the background of the research area in terms of its environment and landscape, political history, socio-economic aspects, and women's role in development.

Chapter 4:"Women's Educational Development" examines the development of women's education in Pakistan as well as in the Northern Areas. The chapter also reviews the impact of education on rural women's lives and the factors affecting girls' education in the Gilgit Agency.

Chapter 5:"Research Design and Methodology" basically discusses the purpose, scope, and methodology of the collecting and analysis of data for this research project.

Chapter 6:"Results and Findings" examines the research results in order to find the effects of education on women's fertility change, child mortality, and participation in the paid labour force. The impact of education on family size and family planning in terms of knowledge and the use of contraception are also examined here. Further, the effects of education on child care practise, and the relationship between women's economic activity and fertility are explored.

Chapter 7:"Conclusion and Policy Implications" is the final chapter. Based on the findings and results of data analysis, some conclusions are drawn as to what extent women's education has played a role in the development of the rural areas in the Gilgit Agency, and to what extent an increase in women's access to education will accelerate economic growth and

the quality of life in this area. Some policy implications and recommendations are also suggested.

2. LITERATURE REVIEW

Historical Context

Women's education as a research concern is relatively new to academic scholarship as well as to policy makers. In the post-war era and before the rebirth of the women's movement in the late 1960s, academic research and policy studies focusing on women were virtually non-existant. The literature in most disciplines such as education, sociology, anthropology, history, political science and economics ignored women or assumed that their roles were marginal to public life (DuBois, 1985). Referring to the limited research literature on women's education before the 1960s Kelly and Kelly (1989: 15) observed:

> Studies of education and its outcomes were, when all said and done, studies of males. Gender was rarely acknowledged, even as a background variable.

There were some handful of scattered individual studies which remained outside the mainstream of research. For example, the International Bibliography of International Comparative Education was published in 1981 and covered about 3080 works listed on education worldwide; of these only 33 were on women. A bibliography of published and unpublished research on women's education in the Third World compiled for the International Bureau of Education which included materials issued to 1979, yielded 355 citations (Kelly and Kelly, 1982: 10).

However, the last decade has witnessed a proliferation of research covering various aspects of women's education and development. This is evident from the fact that an annotated bibliography entitled 'Women's Education in the Third World published in 1989 contains approximately 1200 citations, covering a rich and diverse research literature on a wide range of topics. Thus, before reviewing in detail the literature on the impact of women's education on certain issues of development in Northern Pakistan, it is essential to examine the development of literature on women's education.

In the 1950s and 1960s major political changes occurred in the world. Many countries in the developing world emerged as independent nations. The economic development for these nations became an international concerned. In the late 1950s and early 1960s with the help of the United Nations and aid agencies from advanced nations, almost all newly independent nations embarked on economic development and educational expansion.

Thus, it was the decade of 1960s that experienced the rise of a research and policy literature on development which totally ignored women's contribution while focusing on how a country might modernize through schooling. Many studies such as Inkeles and Smith (1974) and others that followed their footsteps became the basis of policy prescription. These were studies of male's attitudes and how they contributed to development.

The research on women's education in the Third World which began as descriptive literature, tends to provide a glimpse of women's educational enrollment patterns, the history of women's education and the relation between schooling and women's status in society.

However, it was Ester Boserup's (1970) work *Women's role in Economic Development* that linked for the first time, women's contribution in the process of development, and female education to development and production. Following Boserup's work, much of the literature of the 1970s focused on women's education and labour force participation. The second stream in the literature linked women's education to national development via roles in reproduction.

It was in the late 1970s that scholars began to explore the question of how education improves women's lives and whether improvement in material conditions of women represented progress towards equality and liberation. This shift in literature became evident as feminist critics began to see modernization as oppressing rather than liberating women (Mead, 1976; Palmer, 1977; Boulding, 1980; Ward, 1983; Charlton, 1984).

Women, rather than state policies or national development, increasingly became the starting point in research projects. This shift also led to changes in the development of research strategies i.e. quantitative to qualitative form of inquiry and participatory forms of research.

Placing women at the center of research has also led the researchers to consider unequal power relations not only in the family but also in the work

place and in the society at large. Studies of women's education and labour force participation began to explore the question not only whether education increases women's workforce participation rates, but rather whether education changes the jobs at which women work, women's income relative to men's, and the pattern of gender segregation--both horizontally and vertically--which is the major characteristic of the labour market of most Third World countries (Kelly and Elliott, 1982; Karuna Ahmed, 1979; Devi and Ravindran, 1983; Strivastave, 1977; Blumberg and Dwarki, 1980; Chapman and Harding, 1985).

Likewise, the literature on women's education and fertility also witnessed new currents which challenged the old ones. In the 1970s the demographic studies simply looked at national educational levels and fertility rates. Later in the 1970s and early 1980s studies began to examine the fertility level of educated women who were part of the labour force. Other research began to compare women's versus men's attitudes towards family planning methods, decisions about completed family size, how female education is related to child care practices, and how decisions about child bearing are made (Chaudhry, 1984; Aghajanian, 1981; Kurian and Ghosh, 1981; Khan and Sirageldin, 1979; Ware, 1987, United Nations, 1983).

Further, there were a few studies that began to look at power relations in the family and how education of women affected them. Thus, the shift in research studies which consider women themselves as a starting point rather than development, has engendered a set of debates and new directions and trends for future scholarship in women's education and development.

The literature on women's education in the Third World has witnessed another change in last two decades. In the 1960s, for the most part, literature on women in Third World countries was written predominantly by women in the United States and Western Europe working in universities and in public and private national and international agencies. In the 1980s the literature is no longer dominated by scholars from the industrialized world, although their voices remain strong.

Increasingly, women from Third World countries have generated a variety of literature on women's education. For example, a voluminous research on women's education in India reflects in large part the presence of a number of professional Indian women scholars working in universities and research institutions; the strength of the Indian feminist movement; and the

development of a large indigenous publishing infrastructure. Due to this growing presence of women scholars, from all regions of the Third World, in the research community the directions for further research have changed, and a new debate is taking place.

Having discussed the development of the literature on women's education and development, the rest of this chapter is devoted to examining the literature concerning the relationship of education to fertility, child mortality and women's participation in the labour force as these are the variables examined in this dissertation on the Gilgit Agency in Northern Pakistan.

The Effects of Education on Fertility Change

Theoretical Approach

Much of the concern over the danger of rapid population growth in the world focuses on the underdeveloped areas of the Third World, which has attracted the attention of many demographers and development researchers alike. This rapidly increasing population growth in less developed countries is a consequence of their experience of lower mortality rates concurrent with high birth rates (World Bank, 1984).

In economically more developed countries (MDCs) there has been a gradual decline in fertility rates and the classic demographic transition theory attributes this decline mostly to industrialization and economic development and a concomitant increase in urbanization, income and social mobility. This theory constituted "an elaborate description of the various stages in the development of the industrialized countries, at which mortality and fertility behaved in particular ways, with low mortality and fertility prevailing at the point where economic and social development has been achieved" (Simmons, 1983: 12). And like Rostow's theory of development, it was believed that process would hold for the LDCs as well.

An increase in educational attainment was seen as an inevitable accompaniment to the economic restructuring of the society but its role in fertility decline was not emphasized by the transition theorists. Subsequently, the demographic-transition theory failed to hold good for a number of Western countries, and in fact, many developing countries witnessed fertility decline in spite of failing to achieve rapid industrialization. This fertility

decline in developing nations, such as Sri Lanka, Kerala in India and China, where development changes have been in the direction of basic-needs objectives and where the population are mainly poor and rural, led population development theorists to divert their attention from economic growth to other factors associated with the distribution of development gains.

Freedman, for example, has observed that "developing countries that have experienced fertility decline have the following changes in common: better health care and lower infant mortality rates, higher education both for males and females, better welfare programs and better communications and transportation" (1979: 65-66).

However, since the Second World War, education has occupied a central position in the process of development, which encouraged researchers to focus their attention on the role of education in fertility behavior in developing countries. It was then considered that a decline in fertility rates in developing countries was due to expansion of educational and occupational opportunities for women, later age at marriage and increasing availability of contraception (Teitelbaum,1975; Westoff, 1978). Thus, on the basis of experience from developed countries many demographers and social scientists assume that as educational expansion gets underway, and as women in developing countries continue to receive higher levels of education and enter the labour force, fertility in developing countries should continue to decline and level out at replacement levels (Standing, 1978; Huber, 1980).

The relationship between education and fertility is held to have two major aspects. First, education is associated with fertility behavior and the relationship between education and fertility is assumed to be inverse. Second, an increase in educational opportunities for women will help to reduce the fertility rate and population growth. Education therefore, has come to occupy an important place in investigative work both as regards to differential fertility by socio-economic status, and more fundamentally in search for causal explanations of fertility levels and fertility change.

The knowledge about the education-fertility relationship is especially relevant for development planning because education is a policy variable which lends to manipulation in several aspects of women's lives. For example, the United Nations (1983: 1) contends that,

> Among national populations, such as in South Asian countries, where high fertility is considered an obstacle to development, detailed knowledge of the education-fertility relationship would doubtlessly facilitate decision concerning educational levels, curriculum content, the structure of the educational system and, ultimately, the division of resources between education and other competing programmes.

Following this reasoning, many pragmatic economists have maintained that if the arguments and consensus on the education-fertility relation are accepted, then it could be claimed that education for women should be increased to reduce fertility.

Thus, one of the hypotheses reviewed in this study is that education is an important predictor of fertility and increased exposure of women to education will tend to reduce fertility rate in developing countries. Before testing this hypothesis in light of the evidences from Northern Pakistan and before suggesting any policy recommendations to increase women's educational opportunity in order to control population growth, it is best to review a broad range of studies and the evidence which illustrate the impact of education--negative or positive--on fertility behavior and to understand the circumstances in which an inverse or direct relationship is likely to arise. These empirical studies related to education-fertility relationships are divided into three categories as follows:

i Direct effects of education on fertility change
ii Indirect effects of education on fertility change
iii The problem of conceptualization.

Direct Effects of Education on Fertility Change

The relationship between education and fertility has been examined since the beginning of the study of economics and demography. Malthus and his successors proposed several theories about why more education is usually associated with lower fertility. However, according to Cochrane (1979: 11) these theories are not complex enough to account for typical cases.

In the literature on the determinants of fertility, perhaps the most widely accepted generalization is that of the inverse relationship between

education and fertility. However, education affects fertility through a wide range of factors, and as a result the effect is not consistently inverse. Various studies have been undertaken in the developed and developing societies around the world, which indicate that education may cause fertility to increase or decrease.

For example, Cochrane (1979, 1983), in her review of literature on fertility and education presented evidence which show that education may either reduce or increase fertility, depending on various intervening factors. For instance, the decrease is greater in relation to the education of women than of men, and greater in urban than rural areas. But education is more likely to be associated with an increase in fertility level among countries with the lowest levels of female literacy. In light of this discussion the direct effect of education on fertility change has been divided into two sub-sections: inverse and positive effects.

Inverse Effects of Education on Fertility

A review of the demographic literature reveals a growing belief that women's educational attainment is inversely related to fertility. It is true that the existence of a generally inverse relationship is fairly well documented in the literature. For example, McGreevy and Birdsall (1974: 12) reported that, "the inverse relationship of education to completed family size is one of the most clear-cut correlations found in the literature." Simmon (1974) noted that both cross-national and intra-country cross-sectional studies demonstrate that an increase in income promotes an increase in access to education, and increased parental education in LDCs reduces fertility. Cheg, Lowson and Levine (1979), also found that exposure to education tends to reduce fertility.

Mason and others (1971: 12) observed that there is overwhelming empirical evidence for the following relationship: "the higher the educational level of the husband and wife the lower the fertility." Several cross-sectional studies using either national or sub-national population have demonstrated an inverse relationship between education and fertility. One such aggregate study at the national level constantly showed the expected inverse relationship (Janowitz, 1976). In fact, a number of studies using a simple correlation method have found a strong inverse association between education and fertility, despite the fact that no two studies have used the

same measures of both education and fertility (Heer 1966; Bogue 1969; Kasarda 1971; Kirk 1971; Ekanem 1972; and Repetto 1974).

The studies conducted through multiple regression techniques show that the larger the proportion of illiterate population the higher the associated fertility. Russett (1964), Friedlander and Silver (1967), Ekamen (1972), Gregory and others (1973), McCabe and Rozweig (1976) and Freedman and Berelson (1977) have all used multiple regression equations relating the crude birth rate to various measures of illiteracy. All have introduced per capita income as a control variable and all the studies except Friedlander and Silver (1967) show that the higher the level of illiteracy among populations the higher the fertility. Friedlander and Silver found, however, that in the most economically developed and least economically developed countries, fertility was often lower in the countries with high illiteracy rate.

In their discussion of the findings of the World Fertility Survey (WFS), Cleland and Hobcraft (1985: 239) reported that, "WFS individual level analysis has furnished massive confirmation that higher levels of parental education are associated with the greater use of birth control and lower marital fertility." Similarly, in an analysis of the data on education and fertility in India, Jain and Nag (1985: 50) found that, "female education in India monotonically increases the use of contraception and age at marriage, both of which, in turn decreased fertility.

The effect of education at an individual level can be examined by comparing the average fertility of the educated women with that of uneducated, that is, some education versus no education or the literate versus illiterate. Cochrane (1979: 33-35) in her review on education and fertility has reported eight cross-tabular studies, in which fertility was measured (controlling for age) of educated and uneducated women. The difference in the fertility between educated and uneducated was expressed as a percentage of the lower fertility level of the two. In these studies an inverse relation was observed except in two cases, that is, for towns in Sierra Leone and for married women of 15 year in Nepal, where the relationship was positive (Amani,1971; Dow,1971; Ekamen,1974; Goldstein,1972; Rule,1963; Stycos and Weller, 1967; Yaukey 1963; World Fertility Survey, 1977 (see appendix I for details). However, the studies also show the evidence that the higher the illiteracy rate in the country, the smaller the difference between

the educated and uneducated; but there were very few cases observed to state this conclusively.

The inverse relationship does seem to hold good for South Korea and Taiwan (Jones, 1978). In Thailand, Goldstein (1972) found an inverse relationship between years of schooling of women and mean number of children born in both rural and urban areas, and concluded that, "overall, education plays a key role as an instrument of fertility reduction" (Ibid, 436).

A review (by Cochrane 1979) of over twenty five aggregated studies has shown evidence of (i) a nonlinear relation between education and fertility, (ii) stronger inverse relations in urban as compared to rural areas, (iii) possible difference in the relation for male and female education, iv) a stronger inverse relation in the long run than cross-sectional studies (Stycos 1968; Hicks, 1970; Li, 1970; Merrick, 1974; Schlutz, 1972; Ben-porth, 1973; Hicks, 1974; World Bank, 1974; Cochrane, 1978). A detail list of these studies is presented in appendix II.

Thus, from the studies discussed above--simple correlation, multiple regression and individual level analysis--a pattern of relationship between education and fertility emerges. Simple correlation shows the uniform inverse relation frequently cited in the literature. Multiple regression that controls for age or income level also generally shows an inverse relation; but the relation of education to fertility appears to differ by level of development and level of literacy among population. Individual level analysis mostly shows an inverse relationship, however, in developing countries variations persist depending upon level of development and socio-cultural factors of the country. The accepted inverse relationship then is that each increment of education correlates with a reduction in fertility.

Positive Effects of Education on Fertility:

In addition to studies indicating an inverse relationship between education and fertility there are many instances of deviant cases, cases that show an opposite relationship rather than the accepted inverse one. For example, a study based on analysis of national demographic survey data shows that, "at the earlier stages of economic development, a rise in the level of income and education merely aggravates the population problem" (Encarnacion, 1974).

Further, a review of the literature on the determinants of fertility by McGreevy and Birdsall (1974) also lists a few instances of a positive relationship. A study conducted by Ketkar (1978) in Sierra Leone describes the relationship between education and fertility as an inverted U-shape curve. Another review (Wastoff, 1979) points out that some studies have found either a positive relationship or one close to zero when other possible predictors of fertility were examined simultaneously.

A 1978 multivariate study conducted in ninety four countries by Mauldin and Berelson showed little effect of education upon fertility change. Furthermore, from a comparison of many cross-national results, it appears that the relationship between education and fertility is negative, but when only developing countries are considered the results are not significantly satisfactory (Aanker, 1975; Janowitz 1976).

Cross-regional aggregate studies using a sub-national populations conducted in the United States have shown either no relation or a positive one between education and fertility (Kamerschen, 1971; Heer and Boynton, 1971). Another study using child-women ratio and literacy rates in three Latin American countries (Bolivia, Panama and Honduras) also exhibits a positive relationship (Stycos, 1968).

Further, Cochrane's cross-tabular study on the relationship between age adjusted fertility and education levels also shows some irregular relationships, for example, in Buenos Aires and urban Thailand in 1969, the relationship was found to be irregular. Other studies show a curvilinear relationship; that is, fertility tends to rise first with education and then decreases. Similarly, Schultz's (1972) study in Egypt also indicates nonlinearity in the relation. He found that small amounts of education may be associated with increased fertility but at higher levels of education, an inverse relation emerges. Ben-porath (1973) found an inverse relationship with female education but found that, in contrast, male's education is positively related to fertility.

In the review by Jones (1978) of findings for Southeast Asia, some studies show an inverse relationship, but others in Philippines, Thailand, Indonesia and Malaysia show a inverted U-shaped relationship between education and fertility. That is, fertility is slightly lower for uneducated women than for women with a few years of schooling and declines again at levels of education beyond a few years. In a similar vein with regards to

Africa, Ware (1978: 55) observed that there is general agreement that a minimal degree of education tends to raise rather than lower fertility.

The percentage of the cases with an inverse relationship, as reported by Cochrane, varies from 52% in the societies where the illiteracy rate was under 40% to 29% in societies where the illiteracy rate was over 60%. Thus, she concludes that:

> The presumed inverse relationship between education and fertility primarily characterizes countries with moderately high female literacy rates and . . . in some of the countries with low levels of female literacy, exposure to some types of education [can be] associated with a rise in fertility over the levels prevailing for uneducated women (Cochrane and Baidya, 1977: 7).

Further, the relationship may be affected by the level of societal crude birth and death rates. Serim Timur's (1977: 70) study in this respect suggests that there are three stages of societies which show varied relations. Stage I societies, where crude birth rates and fertility tend to be constant; stage II societies, where inverse relationship is clear cut and evident in a decline in birth rates; stage III societies that have experienced sharp declines in fertility because of the inverse relationship between female educational attainment and family size.

The United Nations paper *'On the Recent Trends and Conditions of Fertilityy'* presented at New Delhi in 1983 identified four patterns which the education-fertility relationship may assume (see Appendix III). The U.N. presents these patterns in four curves which depict a kind of education-fertility relationship that a country may assume depending on its level of development. That is, a small increase in education in the least developed countries can cause a rise in fertility. In developing countries at a somewhat higher levels of development, any increase in education is expected to cause a change in the desire for children, because of the altered socio-economic context (Cleland and Hobcraft, 1985: 201).

The World Fertility Survey (WFS) data covering 22 countries shows that the education-fertility relationship conforms to the above patterns. The least developed countries such as Bangladesh, Nepal and Indonesia show a

rise in fertility with small increases in education, while some highly literate developing countries of Latin America and the Caribbean exhibit a pattern in which higher education changes the desire for children.

Similarly, Rodriguez and Cleland's multivariate analysis of marital fertility (Table 2.1) yielded the same sets of patterns (1981). That is, levels of marital fertility fall across four educational strata--none, lower primary, upper primary, and secondary--in Latin America, the Caribbean and the Middle East areas which approximate the third level of development. However, countries at low levels of development show an increase in marital fertility with small increases in education.

Table 2. 1
Total Marital Fertility Rate

Countries at Levels of Development	Levels of Education			
	None	1-3 yrs	4-6 Yrs	7+
Third Levels of Development				
Colombia	6.7	5.9	4.1	3.3
Jordan	9.3	7.7	6.7	5.6
Low Levels of Development				
Kenya	7.4	8.2	7.8	7.2
Pakistan	7.0	6.7	7.1	5.8

Adapted from: Rodriguez, G and J. Cleland. "Socio-Economic Determinant of Marital Fertility in Twenty Countries: Multivariate World Fertility Survey Conference 1980: Record of Proceedings 2, 1981: 207.

For instance, in Colombia and Jordan, which are at the third level of development, the marital fertility reduces with every increase in educational level--from 6.7 and 9.3 at no schooling strata to 3.3 and 5.6 with more than 7 years of education. However, in Kenya and Pakistan which are at a low level of development the fertility rate increases. That is, from 7.4 at no schooling to

8.2 with 1-3 years of schooling in Kenya and from 7.0 to 7.1 with 4-6 years of schooling in Pakistan.

Thus, the review of the literature on determinant of fertility using various techniques such as, multivariate, cross-regional, crosstabulation show either no relation or positive relation between education and fertility in most developing countries, which have higher illiteracy level and lower economic growth or they are at the lower level of development in terms of industrialization and mass consumption.

Indirect Effects of Education on Fertility

A review of empirical findings so far revealed that education does not have a uniformly inverse relationship with fertility, and an increment in schooling leads to a variety of outcomes. While some studies have found inverse relations, others have demonstrated a positive or an increase in fertility. These studies however, do not clarify how education affects fertility. Therefore, a model was developed in which the effect of education on fertility was determined through intervening variables. The literature in this respect indicates that there are three ways education may influence intervening variables which may have direct, indirect or joint effects on fertility pattern.

First, education may operate independently of other variables to exert a direct impact on fertility. Direct effects are the immediate influence of education in changing attitudes, values and beliefs towards a small family norm. (Holsinger and Kasarda, 1976; Jones, 1975, Berson, 1966, Cochrane, 1979, Smock, 1981).

Second, several indirect effects have been argued by many writers which indicate that education (a) may tend to postpone marriage, delaying the usual onset of fertility and thereby reduces the total possible number of women's childbearing years; (b) facilitates the acquisition of information related to family planning; (c) education also increases exposure to family planning propaganda by making available more channels of communication; (d) increases parent's aspirations for upward mobility and accumulation of wealth that are incompatible with large family size; (e) enhances the likelihood of outside female employment which competes with childbearing as a career; (f) reduces the perceived economic utility of children; (g) education increases husband-wife's communication (h) education in the broader context of modernization, is associated with useful

knowledge about health, hygiene and child-care which leads to better child care practices and improves infants survival rates; (i) education imparts and helps to inculcate a set of attitudes, values and beliefs identified as the essence of modernity which gives women a sense of self-efficacy and control over their lives and trust in scientific technology, and enables them to practice effective contraception (Holsinger and Kasarda, 1976; Becker and Lewis, 1973; DeTray, 1973; Michael, 1973; Ryder, 1973; Germain and Smock, 1974; Caldwell, 1976, 1977; Oppong, 1975; McNamara, 1977; Cochrane, 1979 and 1983; Jain, 1981; Rindfuss, Parnell and Hirschman, 1983; Easterlin 1983; Sathar,1984; United Nations, 1983; Hirschman, 1985; Gille, 1985; Hess, 1988).

With regard to the argument that education delays age at marriage, it is true that most research findings indicate a strong correlation between rising level of education and delay of age at marriage. The premise that delaying age at marriage will lead to reduced fertility is pervasive in the literature (Population Information Program, 1979; Smith, 1983; Mason, 1984). However, there are several studies which demonstrate that this argument has yet to be proved. For example, as Ware (1978:56) pointed out: ." . . it has yet to be demonstrated that the later age at marriage of the highly educated is associated with lower lifetime fertility level".

In a similar vein, an analysis of survey results from nine Asian and eight Latin American and Caribbean countries that participated in the World Fertility Survey showed that women who marry late tend to bear children more rapidly in the early years of marriage (Caldwell, McDonald and Ruzicka, 1980; DeTray, 1977). Gille (1985: 289) in this respect reported that "improvement in primary education as such will not have an effect on girls age at marriage; only raising of the attainment level of secondary education may have such an effect and usually only if improved employment opportunities outside the homes are made available at the same time."

Thirdly, some joint effects of education and intervening variables have also been singled out in the empirical studies. For example, economic factors such as urbanization, industrialization and more generally modernization are considered to influence fertility jointly with education. Urbanization, a phenomenon accompanying industrialization and economic development, may also contribute to the transition to lower fertility, as access to education, health care, family planning services and exposure to new consumer goods tend to be more prevalent in urban areas.

Moreover, education tends to bring attitudinal change and willingness to depart from traditional behavioral pattern (i.e., use of modern contraception to limit family size) which in turn tends to lower fertility (Cochrane, 1979 &1983; Easterlin, 1983; Sing and Casterline, 1985; United Nations,1983; Tsui 1985; Hess, 1988).

Further, per capita income is frequently used as an indicator of the level of economic development and the degree of modernization. Income in many developing countries is positively related to education. The indirect effect of income and education may reduce fertility. For example, an increase in income enables a couple to adopt a higher standard of lifestyle, and to provide better education for each child or more child quality, both of which may conflicts with an additional children. Thus, increased income tends to reduce fertility (Muller and Short, 1983; Caldwell, 1976; Hess, 1988).

While all of the above are intervening variables through which education tend to depress fertility, the relationship between education and fertility may not be monotonic. There are variables through which education may stimulate fertility. For example, there is evidence from the developing world that fertility rises with a modest amount of schooling. The reasons attributed to this pattern of fertility in the literature are as follows.

First, education by promoting better health, would contribute to the increase in potential biological supply of children in variety of ways. For example: i) The association between schooling and better health results in higher fecundity or higher probability of conception as the prevalence of sterility caused by disabling diseases declines and secondly, improvements in women's health, improves a pregnant women's ability to carry birth to term. ii) Parent's education further tends to have positive effect on infant's survival chances. iii) Education of the husband associated with higher income may stimulate the demands for larger family. Part of the reason for this may be that male education is picking up the "pure" income effect as male earnings are positively related to schooling (Cochrane, 1979; Jain, 1981; Gille, 1985; Leridon and Ferry, 1985, Hess 1988).

Second, education may also affect fertility regulation by weakening observance of traditional cultural norms that tend to depress fertility. For example, a few years of primary education may be sufficient to encourage women to forsake traditional customs such as polygamy and taboos related to

a lengthy postpartum period of sexual avoidance. Besides, educated women have been found to breast-feed for a shorter period of time. This practice cuts down the protection afforded by lactational amenorrhea (Caldwell, 1976; Cochrane, 1979; Smock, 1981; Leridon and Ferry 1985; Sing and Casterline, 1985).

Third, the threshold level of family income is another intervening factor. When families remain below the threshold the influence of education on fertility is reported to be positive. Success in primary education in low income countries and predominantly rural and agricultural economies may enable large number of people to acquire slightly higher incomes without climbing above the threshold level. The result will be stimulated fertility rather than reduced fertility (Encarnacion, 1974; Muller and Short, 1983).

Thus, the education-fertility relationship depends not only on the level of educational attainment but also on many intervening factors, as well as direct, indirect and joint effects of education, social, economic, and cultural factors which either depress or stimulate fertility.

Education and Regulation of Fertility

The biological supply and the demand for children determines whether there is a potential demand for voluntary fertility regulation. However, actual, and particularly the effective use of contraception depends on several other factors. For example, attitudes towards contraceptive methods, knowledge of contraception, access to means of fertility regulation, and communication between husband and wife about family size goals are all essential components for fertility regulation. This section examines the existing research demonstrating the effect of education through above variables.

Attitudes, Knowledge and Use of Contraception

A positive attitude toward the use of contraception methods is the first step in successful practice of a family planning process. The basic knowledge about contraception methods and their effects forms an important component in inculcating positive attitudes. Education is considered to be an important determinant of fertility change which influences fertility indirectly through facilitating attitudinal change, knowledge and use of family planning

methods. The empirical studies which suggest such effects of education are described below.

Cochrane (1979), in a comprehensive review of the research conducted on effect of education on fertility, gives a summary of studies undertaken in various regions of the developing world. Of 13 studies only two indicate irregularity between education and attitudes towards birth control. These are Knodel and Pitkapsombati's (1973) survey of Thailand and Palmor's (1969) study in West Malysia. The rest of 11 studies indicated a direct relation between education and the attitudes towards birth control. Further, in the same review, the study by Morrison (1961) in India and Pareek and Kothandapani (1969) showed interaction between education and place of residence and the type of work.

Moreover, studies in the 1980s show that education tends to bring attitudinal change and willingness to depart from traditional behavioural patterns and to use modern contraception methods to limit family size which in turn tends to lower fertility (Cochrane, 1983; Easterlin 1983; United Nations, 1983, 1985, Sing and Casterline, 1985; Tsui, 1985, Hess, 1988; Agyei, 1988).

The hypothesis that education acts upon contraceptive use at least partially by facilitating access to contraceptive knowledge, is supported by a number of studies. Again, Cochrane's (1979: 120-121) evaluation of a series of studies concerning contraceptive knowledge and education show a very strong support for a direct relation, except in the case of Thailand, where women with 1-3 years of schooling in rural areas are slightly less likely to know any method. However, the World Fertility Survey conducted in Thailand in 1976 showed a uniformly direct relationship between education and contraceptive knowledge.

Studies which controlled the variable of place of residence in Thailand show that the difference in knowledge across educational classes in rural areas seemed greater than in urban areas (Chung, et. al. 1972). Caldwell and Igum (1975), however, found that while those with some schooling were more likely to know about modern contraception methods, the differences for urban areas were not necessarily smaller than in rural areas.

A recent survey of 22 WFS countries undertaken by the United Nations (1983) indicated a monotonic increase in knowledge of contraception in all countries, with the exception of Fiji and Pakistan. However, a large

amount of variation is noted among respondents with no education. For example, the percentage of women having no knowledge of contraception method ranges from zero percent in Fiji to 80 percent in Nepal.

In addition to education several socio-economic variables such as age, income, urban experience, exposure to media and age at marriage, may have some impact on contraceptive knowledge. Arnold (1975) used several economic indexes to explain contraceptive knowledge, and found that education was significantly positively related to knowledge in all cases. In the Celade study (1972), the partial correlations for education were significant everywhere and ranked first in most cities, but not in all. Thus, Cochrane (1979: 122) concluded that " education has a significant effect on contraceptive knowledge in countries with and without family planning programs even after controlling for many other variables."

A combined effect of education on attitudes and knowledge is effective only when it is translated into the practice of contraception in terms of its usage to control fertility level. Thus, the relation between education and actual use of contraceptive needs to be examined. Again Cochrane's evaluation of studies in Asia, the Middle East, and Latin America show a positive relationship between education and use of contraception even after controlling for other factors (Celade, 1972).

In Asia, the studies in Taiwan (Speare et al., 1975), Nepal (WFS, 1977), Korea (Chung et al., 1972), and Thailand (WFS, 1976) all indicated direct relationship of education to contraceptive use, except in rural West Malaysia (Palmore, 1969) where there was no difference by education.

In a Middle East study in Egypt (Khalifa, 1976), deviation from a strictly direct relation was found for males. In Lebanon (Yaukey, 1963) education was found directly related to both past use of abortion and contraception among Moslems and Christian urban areas.

Recent studies assessing effect of education on use of contraception show direct impact of education. For example, a study by Sathar and Chidambram (1984) in eight Latin American countries show that the percentage of women currently using contraception increased with increase in education from 1-3 years and above. According to Cleland (1985) "similar examples can be found in other regions. For example, contraceptive use among literate women is much higher in Tunisia." Further, in the Republic of Korea; the timing of change was more closely related to level of education

than to urban residence. For instance, in 1966 a mere 16% of women with no schooling reported use of contraception compared to 40% among those who had reached high school (Cho, Arnold and Kwon, 1982).

Thus, it is evident from the above studies that the relation between education and contraception use is almost uniformly direct. It is certainly more uniform than is the relation between actual fertility and education.

Desired Family Size or Fertility Preference

Desired family size is another variable on which education may impact resulting in lower fertility through changing women's attitude towards smaller family sizes. The relationship between desired family size or fertility preference is difficult to establish with cross-sectional data from developing countries for two reasons. First, most studies in developing countries focus on actual rather than desired family size. Second, women's preference for desired family size depends upon various factors such as, age, social status, family pressure, sex preference and husband's desired family size. In this work, the number of studies considered have been limited and the major focus is on the World Fertility Survey.

Cho (1978) used WFS reports to determine the differentials in family size preference among women with various levels of education in five Asian countries: Korea, Malaysia, Nepal, Pakistan and Thailand. This report shows that in Thailand, more educated women in all age groups, though especially 24-34 years, tended to want more children than they already had. Korea and Malaysia showed a similar pattern, but not Nepal and Pakistan. In all these countries women with less education tend to have larger families than those with more education.

A report of the United Nations for comparative analysis of fertility preference using data from 15 countries indicated three patterns for education: i) no effect in Fiji, Sri Lanka and Korea ii) a curvilinear effect with middle school low in Bangladesh; and iii) a decline as education increases in all other countries (United Nations, 1981). This suggests that in most countries the relation between education and desired fertility is inverse.

In addition to the above inverse relationship between education and desired family size, some variations exist. For example, the common notion that uneducated women have unrestricted fertility desire or desire more children than do educated women, was initially challenged by Brackett and

his associates (1978) in the analysis of 10 WF surveys. The study indicated that after appropriate controls for family size, the proportions of women wanting additional children are only marginally higher among the least educated and most traditional groups of respondents in a set of countries that included Colombia, Fiji, Korea, Nepal, Pakistan, Panama, Sri Lanka and Thailand. Subsequently the United Nations also found little variation in fertility preference by social background including education.

According to Lightbourne(1984), the differential fertility preference which shows in the results of several countries (Guyana, Jamaica, Trinidad, and Tobago) explicitly supports the position that such fertility differentials between less educated and more educated women is a consequence of differences in successful contraceptive implementation (especially for postponing childbirth) rather than differences in underlying preference.

Thus, the impact of education on fertility preference is not conclusively direct, and like the education-fertility relationship it shows variations depending on various other factors.

Problem of Conceptualizing Education-fertility Relationship

It is evident from the literature presented in the preceding sections that the relationship between education and fertility is complex and increments in level of schooling may lead to a variety of outcomes. The inverse relationship between education and fertility is one of the most consistent and best documented in the literature, but it is not always inverse. Patterns of nonlinearity or curvilinearity and U-shaped relations also exist between education and fertility.

Nevertheless, the frequency of inverse relationship tempts most demographers and development planners to vest education with considerable potential as a policy instrument for counteracting high levels of fertility and population growth. The inverse effect of education on fertility has encouraged international agencies such as the World Bank, the United Nations and Unesco to advocate expansion of women's opportunities for schooling as a means of lowering population growth (McNamara, cited in Smock,1981: 153). Nevertheless, as in the case of relationship between fertility and other development sectors it is not possible to characterize education-fertility relationship in any simple way (Simmons, 1988).

There are several problems in conceptualizing how an increase in education lowers fertility. Many studies have questioned the general consensus about this relationship. Susan Cochrane (1979: 3) in her review of literature on education and fertility aptly inquires: "does such a well accepted relation provide the information necessary to design policies to reduce fertility?" She further indicates that even if the relation between education and fertility is universally assumed to be inverse and stable, it still requires further research to identify the exact nature of the interaction between education and fertility (Ibid).

Smock (1981: 154), echoing Cochrane's view, suggests that much of the existing analysis on bivariate relationship fails to clarify specific factors related to schooling that shape fertility behavior. Similarly, the multivariate analyses are often inconclusive for a variety of reasons such as the small size of samples and inability to control significant factors such as class, culture and ethnicity.

Ware (1978) touched on an important issue when she noted that the vital question still to be answered is why education should have such a powerful influence on women's fertility behavior. As she said (Ibid: 78), "since secondary education for the majority of women [in Africa] is a distant prospect and primary education may even serve to raise fertility levels in the short term, it would be very rewarding to have more information as to precisely where the anti-natalist effect of education is located."

In a review of the literature on education and fertility, Graff (1979) placed principal emphasis on how education is conceptualized as an independent variable and contended that the common ways in which education is viewed account largely for the role it is typically found to perform. Accordingly, the simplistic and linear models view education as a homogeneous enterprise, consistent with the linear view expressed in the modernization model that high fertility is a traditional phenomenon that must change in a downward direction as education rises (Simmons, 1988: 197).

Further, Graff (1979) identified the task of conceptualizing education as at the heart of the matter in reaching an understanding of the education-fertility relationship. In looking at micro-economic, demographic transition and modernization theories, he concluded that transition theory has yielded the weakest and loosest conceptualization. According to him (1979:119)

"education has meant all things and has played a wide variety of roles in the various formulations of demographic-transition. It should not be surprising that complications are so often found." He maintained that, all those formulations are of little use in interpreting and explaining education-fertility relationship and that education should be viewed as more often contributing its influence on fertility less directly and less linearly, since it seems to operate with, and be mediated through, other cultural and structural factors, as is the case with the other determinants of fertility (Ibid).

Moreover, referring to multidimensional effects of education Rindfuss, Plamore, Concepcion and Choi (1982: 243) have noted that, "educational differences in fertility may reflect anything from the acquisition of new ideas, opportunities or aspirations to the filtering of certain skills, attitudes and social positions by selection and attrition processes . . . It is unlikely that in many settings education represents a single dimension."

Since the reasons for an inverse relationship (causation) are not well understood, and there are still no explanations for inconsistencies, irregularities and reversal patterns of the education-fertility relationship there is no clear rationale as yet promoting a policy of expanded education as a means of fertility reduction (Cassen, 1976; DeTray, 1979 and Todaro, 1980).

Acknowledging the fact that quite substantial research is still needed for further exploration of the relationship between education and fertility, Cochrane (1979) drew a few fairly tentative policy conclusions from her comprehensive review. First, although education cannot be expected automatically to reduce fertility in all circumstances, there is tentative evidence that over time, education will ultimately reduce fertility. Second, increasing female education will be more likely to reduce fertility than will increasing education of males. Third, education is more likely to reduce fertility in urban than in rural areas.

In view of the uncertainty and evidence that education indirectly influences decisions on family size, many writers have suggested that alternative policies to directly affect reproduction would slow population growth more effectively than would a policy aimed at expanding education. DeTray (1976), for example, mentioned that an alternative policy such as family planning or policies directly influencing a wife's wages, a couple's contraceptive behavior, and early health and nutrition of children might reduce family size more effectively and quickly than adult education policies.

In addition, Todaro (1981) suggested that until better and more convincing evidence that expansion of educational opportunities for women will lead to fertility reduction is available, the rationale for such policy is simply not compelling. In the mean time he recommended, "placing more emphasis on the provision of increased rural as well as urban job opportunities for women, both educated and uneducated, as the principal economic mechanism for raising standards of living and lowering fertility" (Ibid: 209).

The position taken by DeTray (1976) and Todaro (1981) are also asserted by other writers, who opt for broad based economic development as the most effective way of reducing fertility as such a strategy encompasses most of the indirect factors by which education influences fertility. Holsinger and Kasarda (1979: 179), for instance, indicated that, " . . . since these factors are interwoven in the social and economic structure of a society, we expect that in the long run outlays for fertility control might bring greater returns if they were invested in general economic development of which education is an important feature."

However, most writers who express reservations about recommending policy measures for the expansion of education as a strategy for slowing population growth, nonetheless, agree that, the expansion of educational opportunities for women is a significant and valuable goal for reasons of equity. Further, Simmons (1982: 243) in this respect pointed out that, "In any case, for a variety of compelling reasons the improvement of educational opportunities for women hardly needs the rationale of fertility reduction" (1988: 202). In a similar vein, Birdsall (1977: 87) contends that:

> . . . better educated women will be more productive workers, better parents, and better informed citizens, however, where male/female student ratios indicates that women suffer some schooling disadvantage, fertility effects provide additional justification for rectifying the imbalance.

In summary, it is evident that the relationship between education and fertility is complex and that increments in schooling may lead to a variety of outcomes. The review presented in this paper shows that the inverse relation between education and fertility, as mentioned earlier, is one of the

most consistent and best documented in the literature. However, the review also shows that the relationship between education and fertility is not always inverse, and a definite pattern of nonlinearity or curvilinearirty and U-shape relations also exist between education and fertility.

Further, the education-fertility relationship not only depends on the level of educational attainment but also on many intervening variables such as, the level of literacy rate in female population, age, socio-cultural norms, level of national development, income distribution, females' prospect for wage employment, the sub-group being studied and the time period identified.

Since education directly, indirectly or jointly influences all these factors either in reducing or increasing fertility, and it is obvious from the discussion in preceding pages that neither education nor economic development by themselves are the most effective road to fertility reduction, it can be concluded that women's education combined with factors such as family planning programmes, greater understanding of the importance of small family size and the quality rather than quantity of children, improved opportunities for women to participate in paid work force and the priority given to broad based development programs will contribute towards reducing the fertility rate in developing countries.

Women's Education and Child Mortality Rates

Mother's Education as the Determinant

The notion that educating women in the Third World has a strong and beneficial effect on child care and family life has appealed to many demographers and health administrators. The hypothesis central to this literature review deals with women's education and child mortality, or child's survival rate. It has been hypothesized that a woman with formal schooling will show a greater tendency to adapt strategies to maximize the life chances of her children, that is, their probability of survival and health. Especially in regards to health and survival, it could mean that the more educated mother would be more likely to provide a healthy diet, seek appropriate medical help and follow medical advice in preventive and curative child care practices. In asserting the above view the Report of Education Commision, Government of India (1966) has stated that,

> . . . for full development of our human resources, the improvement of homes and or moulding the character of children during the most impressionable years of infancy, the education of women is of even greater importance than that of men.

The evidence relating education of women to infant/child mortality rates is as striking as that concerning illiteracy of women and fertility patterns in developing societies. For example, Table 2.2 shows that countries with the higher levels of women's education tend to have lower birth rates and lower infant mortality rates than countries with lower levels of women's education. That is, the developed regions where women's literacy is as high as 99% show a 2% fertility rate and only 11 deaths per 1000 births, compared to Africa, where the literacy rate is 34% and fertility and infant mortality rates are as high as 6.6% and 116 per thousand births respectively (Sivard, 1985: 35-38).

With regard to the infant mortality rate, it has been observed that educated parents have a positive effect on infant survival, which enables a large proportion of the children to live to adulthood (Cochrane, 1979: 8-9). Declining infant mortality in developing countries was attributed to various factors such as changes in the socio-economic and medical or technological conditions. Then it was argued that an important aspect of some mortality decline had been due to improvements in nutrition, cleanliness and individual hygiene and to some extent to housing, clothing or standard of living (McKnown, and Brown, 1965; McKeown, 1976b; and Razzell, 1974). In other words, the declining mortality is considered to be a "spin-off" effect of modernization and economic and medical technology development.

The idea that development ***per se*** is the best remedy is no more valid for mortality reduction than it is for fertility reduction. Improvements in nutrition, standard of living and individual hygiene as a result of economic development are not the only socio-economic factors which are responsible for a declining infant mortality rate. Caldwell in this respect challenges the validity of the above assumption by asking pertinent question such as "how does individual hygiene change and who decides upon greater cleanliness and why? Who uses modern technology, how well, and in keeping with

Table 2. 2
Women's Literacy, Fertility and Infant Mortality Rate

Regions	Literacy Rate %	Fertility Rate %	Mortality Rate Per 1000
World Developed	68	3.3	73
Developing	99	2.0	15
N. America	50	3.8	82
W. Europe	99	2.0	11
E. Europe	97	1.8	12
Latin America	97	2.3	22
Oceania	81	3.9	56
Far East	91	2.5	35
Middle East	81	2.0	45
South Asia	46	5.1	86
Africa	31	4.3	111
Sub-Sahara			
Other Africa	34	6.6	111
	44	5.4	87

Adapted from Sivard, R.L. Women . . . A World Survey, 1985. pp. 35-38

whose decision? Is the population merely the passive recipient of these changes, or does it play an active role?" He further states that, "evidence has accumulated that maternal education plays a major role in determining the level of infant and child mortality, but little attempt has been made to explain this phenomenon and it frequently seems to have been assumed that maternal education is merely a reflection of the standard of living" (Caldwell, 1979:396).

The answer to all these questions can be summarized in a statement of the United Nations (1977: 149) :

> The institution of free and universal compulsory schooling, resulting in mass literacy, and the inclusion of lessons in personal hygiene in the school curriculum, have created far greater awareness of health matters among populations, encouraging an application of basic good health practice, and leading to earlier recognition and treatment of diseases.

Further, Caldwell (1986: 210) analyses how Costa Rica, Sri Lanka and the Indian state of Kerala, achieved substantial success in mortality reduction despite their low capita income levels. He argues that "Low mortality for all will not come as an unplanned spin-off from economic growth." He identified number of reasons, but he attributed success primarily to the fact that, in each of the above three cases top priority was accorded to education and particularly to female education, and health services for all.

Similarly, in a study of mortality differentials in two Indian states of Kerala and in West Bangal, Nag (1981) found that the mortality level in Kerala was considerably lower than in West Bangal. He interpreted this difference as due to the distinction that can be made between economic and social development, where social development is construed as development of social services such as, education, health care and transportation, and economic development is measured by per capita income and the distribution of income. From the evidence, Nag concluded that West Bangal is characterized by a higher level of economic development and Kerala by a relatively higher level of social development. The lower mortality in Kerala according to Nag can be attributed mostly to its higher social development, particularly in education and health services (Ibid).

In a similar vein, on the basis of papers prepared by World Bank's staff on the relationship between education and health, Cochrane, O'Hara and Leslie (1980: 3) found that, "more educated parents, even those with small amount of education, have healthier and longer living children."

Caldwell (1986: 201) on the basis of his research in Sri Lanka, Kerala (India) and Costa Rica stated that, "outside the ambit of the health system,

educated parents are more likely to feed children adequately and to treat them in an appropriate way when sick. They are more likely to be clean and hygienic and to insist on such standards for their children." He further concluded, that, "much depends on the level of education, and education could be said to catalyze that change" (Ibid, 204).

In light of the above argument, it is evident that economic development only is usually not sufficient for reducing mortality. According to Preston (1978a: 13-14) "without structured development in education and health care, unstructured development is almost certainly not the best pill if the goal is mortality reduction."

Education and Child Mortality: Empirical Studies

A number of studies on this subject have demonstrated that, mothers' educational level plays the most significant role in a child's survival and health care practice. For example, Gaisie (1969) employed data from Ghana's census report (1960) show that the proportion of children's death was twice as high for mothers with no education compared with mothers with elementary education and over four times as high for mothers with no education as for mothers with secondary education.

Similarly, figures from a 1966 survey of Greater Bombay carried out by the International Institute for Population Studies indicated that the infant mortality rate among mothers with no education was almost double that among mothers who had completed elementary education, and almost triple among mothers with education beyond elementary levels (Ruzicka, and Kanitkar, 1972: 199-200). Similar results were observed in surveys carried out in Ghana in 1965-66, Upper Volta in 1969 and Niger in 1970. That is, the ratio of the proportion of dead children to mothers without education to mothers with education ranged from 1.1 to 1.4 in urban areas and 1.3 to 1.4 in rural areas (cited from Caldwell, 1979: 397).

A 1973 National Demographic survey of the Philippines Alcantara reported infant and child mortality rate fell steeply by education of the mother through five levels of educational attainment (cf. Caldwell, 1979: 397). Similarly, a 1973 survey of Indonesia revealed that, the proportion of a birth cohort dying before reaching their fifth birthday fell with increasing education of the mother, from no education to some elementary education to completed elementary education and above (Lembaga,1973). Child mortality

as noted by Sloan has been declining with maternal literacy in Costa Rica, Mexico and Bangladesh (cf. Caldwell, 1979: 397).

In the case of Costa Rica a mother's education was one of the most clearly identified determinants of decline in infant mortality rate. Roserto-Bixby (1985: 129) explaining the reason for such decline noted: "as a consequence of the improvements in children's schooling in the 1940s and 1950s, the the proportion of women with complete primary education increased from 17% in 1960 to 65% in 1980. This undoubtedly helped to accelerate the decline in Costa Rican infant mortality."

Similarly Behm (1982) has documented the strong negative correlation between education and child mortality in Latin America around 1970. He found that, "the children of illiterate women are four times more likely to die than those whose mothers have secondary education." Further, the relationship between early child mortality and maternal education in Costa Rica parellels that of Latin America as a whole, suggesting that important decreases in child mortality rates could be realized by improving women's educational level (Roserto-Bixby, 1985: 129).

Similarly Kitagama and Hauser (1973) reported that in the case of the United States of America, the infant mortality rates for mothers with no education or elementary education has been shown to be double that of mothers with college education.

A major study conducted by Caldwell in 1973 in Western Nigeria also reported differences in infant and child mortality by education of mothers, consistent across categories differing by age, socio-economic background and current socio-economic situation. For instance, 27.6 % of the children born to all women between 45-49 years of age were reported to have died, but for illiterate women in that age bracket the figure was 29.6%, for women with primary schooling 24.8%, and for those with some secondary schooling 11.8%. Younger women as a whole reported a smaller proportion of children who died. However, in each age category those with more education showed a smaller proportion of deaths.

Though the difference between illiterate mothers and those with primary schooling is not significant, the difference between women with no education and those with secondary schooling is nearly 17.8%. That is, the life expectancy of a child whose mother had some secondary education was

between 10 and 17 years greater than a child whose mother did not go to school (Levine, 1982; 289).

With respect to other factors such as material conditions, occupations of parents, area of residence and access to health facilities, Caldwell (1979: 407) states that, " . . . in terms of child mortality, a woman's education is a good deal more important than even her most immediate environment." Emphasizing the influence of the availability of health facilities on child mortality, he further noted that, ." . . in the town that enjoyed ample health facilities the differential use by mothers' education was not statistically significant, and in fact, most families used the facilities frequently. Yet the chances of a mother without schooling losing a child was two and a half times that of a mother with schooling" (Ibid: 396).

He concluded his analysis of Nigerian women saying,

> . . . when five other control variables are employed, there is still a downward trend in child mortality so that children of mothers with secondary schooling average little more than half the chance of dying than children with mothers similar in terms of the other five characteristics but who have not had any schooling" (Caldwell, 1979: 407).

To what extent can Nigerian findings be universally generalized? In response to this question Levine (1982) has noted a number of recent studies conducted by Caldwell in other parts of West Africa, India, Indonesia, the Philippines, Ecuador, Chile, Costa Rica and the United States of America - all of which point in the same direction. Furthermore, the United Nations' study of 115 countries concluded that maternal literacy shows a higher correlation with life expectancy at birth than any other factor (Kitagama and Hauser, 1973). Similarly, Farah and Preston (1982), employing data from Sudan Segment of the Changing African Family Project also found that parental education, especially that of the mother, play an important role in child survival in Greater Khartoum.

In the Middle Eastern Region, Tecke (1985) noted that maternal education is crucial in reducing child mortality and improvement in medical technology is not in itself enough. He further stated in the case of Cairo (Egypt), the children of educated mothers have much higher life expectancies,

not only because of higher likelihood of immunization against disease, but also because of better nutrition, housing, sanitation and greater care in the purchase and preparation of food.

In the case of Kenya, Mosley (1983) has presented evidence to show that changes in mortality over time and between regions could largely be explained by difference in maternal education and family incomes. He further argued that there was little left to explain after these two factors had been taken into account and that medical interventions did not work in many specific situations. Even immunization is self selective according to the education and other characteristics of family. He also observed that his analysis was supported by the negligible effects of urban-rural residence on infant and child mortality, once maternal education was controlled.

Preston (1985a), interpreting late nineteenth century American data, observed that only when the educational message regarding a specific understanding of the scientific cause of the disease was imparted did the major effect of decrease in child mortality became evident.Caldwell (1983), with reference to Muslim countries, put forward a different argument. He explains that generally girls have limited access to formal schooling and in fact, the enrollment of boys in formal schooling is also low. One reason for this has undoubtedly been the long existence of Koranic schools concentrating on religious teachings. He further noted that, "in term of child's survival there appears to be no equivalence between parental education in Koranic schools and secular schooling . . . in fact where this has been investigated the Koranic school has no impact at all." Thus, Caldwell argues that "the impact of schooling has little to do with institutionalization (of education) as such." Referring to the case of South India, he further argues that ." . . Much of the effect of 'modern' schooling has been to lead the pupil to identify with the whole modern system, including health centers and treatments they recommend", which in turn reduces child mortality" (Caldwell et al, 1983).

In two major comparative analyses of the association between maternal education and mortality, based on proportion of children dead to mothers of specified age or marriage duration, a strong linear relationship was found with an average of 7-9% decline in mortality ratio with each 1-year increment in mother's education (Cochrane, O'Hara and Leslie, 1980; United Nations, 1985).

Another analysis of World Fertility Survey(WFS) data shows no attenuation of the education effect on child mortality as schooling increases. For example, only a few years of primary schooling is associated with a 20% fall in the probability of children dying between age 1 and 5 years; a few more years of schooling brings about another 10% fall, while a 20% reduction comes with secondary schooling (Hobcraft, 1984).

Caldwell and McDonald (1981) analyzed data from 10 WFS in Asia, Africa and Latin America, which demonstrated that for most countries maternal education had a stronger influence on child mortality than did paternal education and both were more significant when income level was taken into account.

In a similar vein, Cleland and Ginnekent (1989) summarize individual studies that have analyzed the maternal education and child mortality relationship after controlling for economic characteristics of household or dwelling. In these studies, it was found that the effect of child mortality remained statistically significant, except in two cases. In the Arab states the evidence of net effect of mother's education was less clear and in rural Syria, economic characteristics of household but not maternal education were significant predictors of mortality in childhood (1989: 18).

Caldwell, in explaining the impact of education on child mortality in Sri Lanka, Kerala and Costa Rica, noted that the high demand for schooling both for boys and girls as a result of religious (in case of Sri Lanka) and political reforms (in cases of Kerala and Costa Rica) paved the way for female education which in turn not only improved literacy rates of women, but also improved the knowledge of mothers regarding nutrition, child-care practices, hygiene and sanitation. He further noted that improved knowledge about nutrition and child-care resulted in higher demands for better health services. Thus, he concluded that, "There is evidence from each of three case studies that it was because of its relatively high education levels that society demanded a fuller and more efficient health system."

Improved primary health services in rural Kerala had a dramatic effect on reduction of child mortality. Reporting on conditions of breakthrough in mortality, Caldwell, Reddy and Caldwell (1983) showed that some education was necessary for a person to feel any identification with modern, as distinct from traditional, curative measures and that with increased schooling parents were more likely to bring sick children to health services, more likely to

follow suggested treatment properly, much more likely to persist sufficiently long with the treatment and much more likely to report back to the health services if a cure was not being effected.

In a similar vein Nag (1985), in the case of Kerala, noted that educated females had a lesser fear of medical examination. In the case of Costa Rica Clandio Gonzaalez-Vega (1985) concluded that, "education and concern for human rights results in a more trusting and respectful doctor-patient relationship."

Education and Child Care Practice: Empirical Studies

Female education and availability and utilization of medical services are two major factors responsible for lower child mortality and improved child care practice. The notion that educated mothers tend to use modern health facilities, both for preventive and curative purposes, has been analyzed by many health researchers. The reason for the above notion is based on the assumption that education is likely to impart greater responsiveness to novel ideas and services, a greater identification with the outside world and willingness to travel outside the home community in search of services.

There is ample empirical evidence to support the above assumption. Most studies in this respect have shown a positive correlation between maternal education and use of modern health services. This tendency was demonstrated for West Africa (Brown et al. 1982; Mbacke and van de Walle, 1987; and Okediji, 1975), for Arab countries (Benyossef and Wessen, 1974; Tekce and Shorter, 1984), and for Asia (Sullivan, 1975; Caldwell , Reddy and Caldwell, 1983).

The single most convincing study with regard to maternal education and utilization of health service is Fernandez's multivariate analysis of data from the World Fertility Survey in Latin America. The findings of this study show that after adjustment for maternal age, residence and husband's occupation, differences according to maternal education and utilization of maternal and child health services remain large (Fernandz, 1984).

Further, studies also show that in addition to positive attitudes and a willingness to use modern health services, educated mothers tend to seek medical attention for themselves and their children and it is likely that they do with timeliness, extract a higher quality of care and adhere to advice with greater persistence. For example, Ware (1984) pointed out that educated

mothers are likely to be better nourished, more willing to ignore harmful food taboos during pregnancy, and less subject to heavy manual work during pregnancy than their less educated counterparts. In Mexico, Levine and others found that educated mothers were more likely to take sick children for treatment within 3 days of the onset of symptoms (Levine et al. 1987).

The shift from traditional to modern western medical treatment by educated mothers is not totally evident in all developing countries. There is evidence that belief in and practice of entirely different system of diseases classification and treatment coexist. But the correlation between exposure of schooling and propensity to resort to western medicine is clear (Cleland and Ginneken, 1989).

However, it is argued in the literature that the advantage conferred by education may be greater in a settings where modern health facilities are available. For example, Caldwell and Caldwell (1985) in the analysis of Nigerian data found a huge interaction between mothers' education, availability of health services and childhood mortality. The presence of health service improves child survival by 20%; maternal education in absence of health services was associated with 33% improvement, but the joint effect of services and maternal education resulted in 87% improvement.

In contrast, Palloni (1982) argues that in societies where services are widely available, personal characteristics, including education becomes less important determinants of health. Similarly, Rosenzweig and Schultz specifically regard the public information component of health services as a partial substitute for the superior knowledge or skills of better educated mothers and expect differences to be smaller in a good health programme. This argument is supported by their analysis of 1973 Colombian census which shows that in urban areas, access to public and private medical facilities had a greater effect on the survival of children of less educated mothers than of the educated (Rosenzweig and Shultz, 1982).

The effect of better health services in reducing the advantage conferred by education should not be considered as a conclusive measure as the difference in relative risks of infant deaths across social classes and educational categories still persist in developing countries (Boss and Shapiro, 1982). Moreover, most cross-sectional studies in developing countries demonstrate that the sharpness of the effect of educational inequalities on childhood mortality is unaffected by controling for access to modern health

services. For example, the studies conducted in Bangladesh, Ecuador and Peru conform to the above findings (Al Kabir, 1984; Borja, 1985 and Young, Edmonston and Andes, 1983).

The review presented here concerning the effect of maternal education on survival of children has examined i) mother's education as a determinant of child mortality, ii) empirical studies demonstrating relationship between maternal education and child mortality rate and iii) education and child care practice.

It is evident from the foregoing discussion that maternal education constitutes an important determinant of child mortality along with the availability of health services. It has been recorded through empirical studies reviewed here that even after adjustment of economic factors, mother's schooling is associated with a fall in childhood risk of death and further large decreases are recorded with successive increment in education.

With regard to the impact of education on child care practice it is evident from the review that i) educated mothers compared to uneducated are more likely to visit modern health services in order to take better care of themselves as well as their children ii) may be more likely to adopt new codes of behaviour in terms of cleanliness and personal hygiene, and iii) have better knowledge about preventive and curative measures.

Further, the interrelationship between maternal education, health service provision and childhood mortality is complex and reflects a variety of results. There are countries whose primary health services are so weak that they have no effect on the health of mothers or children. In other countries services may tend to accentuate educational disparities because of differential access. Finally, there are countries, perhaps few in number, with services of sufficient accessibility and effectiveness to offset the advantage of education and bring about greater equality in health and survival. As argued by Caldwell (1986) the key to low mortality at the societal level may be a synergy between mass education and egalitarian politics which leads to demand for a health service that caters to the needs of all.

Mortality-Fertility Relationship

Theoretical Approach

Fertility and mortality are two major factors considered to be responsible for changes in the national population growth. The population growth began to occur in eighteenth and nineteenth centuries. For example, by 1850 the world population had risen to about 1000 million persons, and within a century the figure increased to 2500 million. The rapid population increase in developing countries has become a worldwide concern since the 1850s as it was less developed countries that were experiencing the largest increase in population. Thus, fertility and mortality in developing countries have naturally been the subject of much investigation as well as the mechanism which link the two processes.

The search for causal explanations for population growth has often led to attempts to create a 'grand theory' which links all the elements of population change within what has been termed a demographic-transition theory. According to Allan and Ann Findlay (1987: 29) the search for a grand theory has been one of the most enduring aspects of population studies and, although it has never met with a complete success, the search has proved most valuable in encouraging population geographers and demographers to refine their ideas and to seek generalization in their empirical research.

Frank Notestein (1945) formulated a demographic-transition theory in 1945. He based his observation on the changes which had taken place in fertility and mortality rates of western countries, and concluded that "the West European patterns of mortality and fertility decline formed a socio-biological model which might be found in other countries including those of Third World".

A central tenet of demographic-transition theory has held that a decline in infant and child mortality is strongly and rapidly linked to a decline in fertility. The demographic-transition theory describes three stages: a pre-transitional stage in which population achieved an equilibrium in size by maintaining relatively high birth and death rates, a transitional stage of imbalance created by continuing high fertility but declining mortality that led people to realize that the probability of their children's survival was increasing, and a final stage in which an equilibrium was reestablished as people began to control their fertility in line with lower mortality.

These three stages of transition theory are shown in Appedix IV. As a descriptive generalization of European demographic trends the theory has a considerable value and the concept of stages of demographic-transition has been rapidly transferred to Third World contexts to describe their demographic development.

Much time and effort have been spent attempting to classify the demographic trends of developing countries in terms of Notestein's three stages. For example, according to Chung (1970), Western Europe, the Soviet Union, North America and Australia had already reached stage three of the transition process by 1960. Many Latin American countries were in the late part of the second stage, while the majority of Third World Countries were still in stage one or in the early part of stage two of the transition. Chung (1970) predicted that by 1980 most Third World countries would proceed to stage three as the demographic transition spread to them. However, empirical studies suggest that many developing countries will likely remain in stage two and instead only a limited demographic transition appears to have occurred

Empirical Research

The notion that a higher reduction in child mortality will reduce fertility encouraged research to focus on the interaction between mortality and fertility rates. In the case of fertility, much of the work was oriented to the "child survival hypothesis", which held that increased certainty of child survival following declines in mortality should produce declines in fertility.

Taylor, Newman and Kelly (1976) in this respect suggested that experience with, or fear of, child mortality may lead parents to have additional children either to 'replace' those who have already died or as 'insurance' against expected death. From this it follows that improved child survival will lead to limited births, which in turn will lead to fertility decline.

However, the demographic theory is not without criticism. For example, Caldwell (1982) has strongly questioned the idea that traditional agrarian societies make irrational decisions about family size. He suggested that decisions about family size are explained by the nature of the household economy. He postulated the wealth flow theory; where wealth flows from the children to the parents as a result of their productive contribution to the household economy, it is rational to sustain higher levels of fertility.

Taylor and others (1976) subsequently revised their position to indicate that reduced child mortality is not a precondition for fertility reduction and if there is a significant effect it would probably be indirect and subconscious rather than volitional.

Similarly, Preston (1978b) after critical examination of the available evidence concluded that the infant and child mortality levels cannot explain fertility rates or family size, and the reduction of mortality is not likely to be conducive to adoption of fertility control. Preston's (1978b) conclusion is paralleled by that of Francis Van de Walle (1986) with regards to the relationship between infant mortality and fertility in European demographic transition. She confirmed that "we cannot report that the historical evidence confirms that decline of infant mortality led to the decline of fertility . . . .Both declines occurred in the course of modernization" (1986: 72).

In the review of Preston's book Kunstadter (1979: 72) commented: "the result of these studies suggested that we can now state the amount of fertility reduction to be expected as a direct result of mortality control is small and probably inconsistent. High mortality does not cause population to grow; lowering mortality by itself, will not cause population to grow more slowly".

However, the factors such as education, family income, economic growth and traditional value of children all distort the measures direct impact of mortality on fertility reduction. Therefore, research on how these factors affect both fertility and mortality is likely to have potential policy significance for population control. Simmon (1988) in this respect contends that whatever may be the relationship between fertility and mortality, it is obvious that the same set of social, cultural and economic factors and various intervening strategies are affecting both birth and death rates.

In light of the above discussion it is evident that there is no clear cut relations between mortality and fertility. Like the impact of education and other developmental factors on fertility and women's participation in the labour force, the interrelationship between fertility and mortality depends on several societal and cultural factors. Thus according to Bongaarts and Menken (1983), and Chen (1983), there is a need for identification of a set of generally accepted proximate determinants, the effect of which on mortality at the individual levels could be studied separately and in combinations, as is now the case for fertility.

The Determinant of Female Participation in the Labour Force

In most countries women represent the component of the labour force whose participation is most sensitive to economic and social pressures. In recent years, the importance or women's participation in the labour force for sustaining economic growth has given considerable impetus to efforts to enhance their economic role and raise their labour force participation. Substantial arguments in favour of increasing women's participation in the labour force have been analyzed in the literature.

The argument that increased access of women to educational opportunities will improve their participation in the labour force has gained considerable ground. Since the 1950s, investment in education and training in developing countries has been rising. High investment in education is partly the result of high fertility rates and the attendant increase in school-age population, as well as the belief that investment in human capital promotes economic growth.

However, despite this high investment, as noted in the previous chapter, women in developing countries, as a group, have not benefited proportionally from resulting economic growth. On the contrary, economic growth has had an adverse effect on the relative economic position of women (Boserup, 1970; Cain 1984; Charlton, 1984; Joekes 1987; Ward, 1984).

Access to education for women has been limited because of institutional factors within the family and society. The United Nations' Commission asserts that "the economic status of women in former colonies is a result of an inherited colonial system of education which discriminates against women by excluding girls from formal education and, later on, excluding women from scientific, technological and vocational training in developing countries. Measures to 'protect', segregate and/or domesticate women are often reinforced by local gender segregation and division of labour. Excluded from education by missionary prejudice, women and girls have also been excluded from high paid employment by entrepreneurs" (Rogers, 1980: 39).

As Todaro (1981) has noted, because of increasing population pressures and underdevelopment, developing nations have been unable to meet the demand for educational facilities. This problem particularly affects women,

because "equal education for women is hampered by a whole set of mutually dependent ideas and traditions that define and limit female roles" (McGrath, 1976). McGrath further, observed that, "in developing countries, the acute shortage of educational facilities, in combination with belief that boys should be educated first, effectively excludes many girls from attending schools" (Ibid, 37).

In a similar vein, Standing (1981:139) reported that, "In recent years the growth of education has been accelerated but in many countries certain groups benefitted considerably more than others. For example, there has been a powerful tendency for males to benefit to the exclusion of females." Further, he says, "once the patterns of education have been set, behavioral reaction has tended to perpetuate the situation" (Ibid). He explains how this vicious circle affects women's entry into the paid labour force, this way:

> Because women have not been expected to work in the labour force, they have been deprived of education; because they have been deprived of education their employment opportunities have been restricted, and because of that their limited access to education has been rationalized and perpetuated (Standing, 1976: 281).

Seen from the above perspective, education contributes to a great extent in defining women's gender role in the division of labour as well as their role as productive members of economies. An important issue under consideration here is whether investment in women's education will have social and economic consequences. Guy Standing (1978: 295) in an ILO study implies that, "with the equalization of educational and training opportunities female participation in the labour force can be expected to increase and . . . a positive association between educational attainment and labour force participation will be much more likely."

Similarly, Ratna Ghosh in her study of Indian women indicates that "better education of women results in increased life options, such as increased sharing of authority in the family; lower fertility patterns; greater participation in social and political activities and increased economic power" (Ghosh, 1986: 35). It is the economic power she noted, "that eventually determines the status of women" (Ibid). With this brief introduction the rest

of this section is devoted to the literature concerning the relationship between education and women's participation in the labour force.

A positive correlation between educational attainment and labour force participation is usually postulated. However, some studies have also reported a negative correlation. Further, there is a conceptual dilemma that circumscribes the issue of the rate of female labour force participation. Therefore, it is essential to examine all these elements of women's labour force participation while evaluating the empirical studies and literature.

Female Economic Activity: The Conceptual Dilemma

The growing amount of literature on women's issues that has appeared since the 1970s has been instrumental in deepening the understanding of the nature and the extent of women's participation in economic activities. It has also increased awareness of the conceptual and theoretical problems that exist regarding the definition and the measurement of women's work.

Two issues regarding women's economic life have become progressively more obvious as studies on women's labour force participation have proliferated. First is an ideological one - that women's work is secondary to that of men - and the second involves the monetary aspect of women's unpaid work. Most labour force and national accounting statistics reflect a gross underestimation of economic activity. Benaria (1982: 120) terms it *'the biases of available statistics'*." Boserup (1970: 163) in her analysis of women's role in the development process clearly states that, "the subsistence activities usually omitted in the statistics of production and income are largely women's work" . Since then, this concern has been widely reported in the literature by other authors and international agencies (Gulati 1975; Standing 1981a; United Nations, 1976; Benaria,1982; ILO, 1976; Psachropoulos and Tzannatos, 1988).

One example, is the fact that women's participation in the economy is frequently under-reported because of their involvement in the informal sector and because of their status as unpaid family workers, which has been pointed out by many researchers (e.g. Boulding, 1983; Muller, 1983; Vanek, Johnston and Seltzer, 1985). On this question Powers (1984) noted that, "there is an acute need to develop indicators that accurately reflect the real productive roles of women in the economy."

Referring to defective data regarding women's participation in the labour force, Gustavo Perez-Ramirez (1978: 17), chief of the Operations Section of the UN population division noted that, "defective coverage of women in many national data collection is especially marked in the case of the labour force . He remarked that, "if the statistics were to be believed, it is the Third World Countries where women are least economically active" (Ibid).

Labour force participation refers to the proportion of an eligible group, classified as of working age, and actually in the labour force (Smock,1981: 212), and the labour force participation rate (LFPR) is defined as "a ratio of individuals who are economically active (the labour force) to total population, that is the population 'at risk' of being economically active" (Psachropoulos and Tzannatos, 1988). This definition can be expressed as:

$$\text{LFTR} = \frac{\text{Active}}{\text{Active + Inactive}} = \frac{\text{Employed + Unemployed}}{\text{Employed + unemployed + Inactive}}$$

In light of the above simple definition the age, gender, or education specific labour force participation is defined as "the ratio of the economically active population falling in that category to the total population in that category" (Bowers, 1975: 57). Similarly, Smock defines age, gender and education specific labour force participation rate as "the percentage of the total stock of a particular group as defined by those characteristics, (which) is reported to be economically active" (Smock, 1981: 213). Although these definitions seem simple and straightforward, there are strong hidden assumptions on the use of what is 'economic' or 'non-economic'.

The definition of labour force participation has evolved since the second world war. In 1938, gainful occupation was defined as "an occupation for which the person engaged therein is remunerated, directly or indirectly in cash or kind" (League of Nations, 1938). In 1966 the United Nations defined an economically active population as comprising "all persons of either sex who furnish the supply of labour for the production of economic goods and services" (cited from ILO, 1976: 32).

However, both of the above definitions failed to adequately account for women's participation in the labour force. For example, a study conducted by Smock through surveys and censuses in five countries shows that various

countries have conceptualized labour force participation very differently. Ghana has employed the broadest definition, including part-time workers regardless of whether they were paid or worked in family enterprises. Pakistan had underestimated women's economic contribution by employing a restricted definition that tends to equate labour force participation with wage employment. Therefore, Smock's study shows female participation as low as 5% in Pakistan and 66 per cent in Ghana (Smock, 1981: 213-214).

Education and Female Labour Force Participation: An Overview

According to Human Capital theory as discussed in an earlier section, education is depicted as a process of investment from which both the society and individuals accrue returns. Education is considered to be the main route to more prestigious employment in the modern world, therefore, it is often observed that the gender gap in the provision of education has been mirrored in lower participation and fewer rewards in formal employment for women. Educational dualism, low participation of women in the labour force, and females clustering in low paid jobs have been reported by many studies in developing countries.

In regards to education and participation in the labour force, a majority of studies show positive relations. The hypotheses underlying the positive relations according to Standing's (1981a) research on labour force participation and development are three-fold.

First, since education is an investment and because education and earnings potential are positively correlated, education raises the cost of economic inactivity and hence provides an incentive to educated women to seek employment. Second education improves employment opportunities for women. Third, education is a major determinant of income expectations, and as such, is likely to induce greater desire for educated women to participate more in economic activities.

Although these arguments assume a positive relationship between education and women's participation in the labour force, in reality in less developed countries it is not as simple as argued by Standing (1981). Women's economic activities are particularly complex and depend upon many indigenous factors other than education.

Similar to Standing, Smock (1981: 11-12) in her study of women's education in developing countries has hypothesized that educational

attainment will improve: (i) women's rates of labour force participation, (ii) women's ability to move into modern sector or non-agricultural employment and (iii) women's representation in a wider range of occupations particularly within the professional and technical range.

The validity of these hypotheses can only be accepted if the evaluation of the empirical research and the literature shows such trends in women's labour force participation. However, before reviewing the empirical findings it is essential to have a bird's eye view of a global picture of women's labour force participation and literacy levels.

Table 2.3 summarizes economic growth, labour force participation and adult literacy rates for women in the major regions of the world. (Sivard, 1985: 39-41). A number of conclusions can be drawn from this table, however, we will concentrate only on those which are relevant to women's labour force participation and its relationship to education and the level of economic growth.

It is evident that the female labour force participation rate in South Asia and Africa has declined since 1950 (-4), which also corresponds with lower literacy rates among women (42% and 36% respectively), as well as lower economic growth in terms of GNP ($226 and $806). However, the Middle Eastern region which has a higher economic growth (GNP $3046), also shows a low literacy rate (46%), as well as a greater decline in labour force participation rate among women (-9). This can be argued in two ways. First, the Middle Eastern region is dominated by Muslims, and due to Islamic religious norms women are secluded, hence restricted from entering into schools and labour markets. Second, the late development of women's education combined with a belief that boys should be educated first, effectively excluded many girls from entering into school.

It is also evident from the data in Table 2.3 that most developed regions having higher economic growth (GNP rate more than $8000), show higher literacy rates, and have higher female labour force participation rates. From these it can be concluded that the level of economic growth and literacy rates of the female population of a country are two major factors associated with women's entry into labour market. The following section examines the findings of other related studies to test this observation.

TABLE 2. 3

Economic Growth, Literacy and Women's Labour Force Participation

Regions	GNP Growth Per Capita	Women's Labour Force Participation 1950%	1980%	Diff %	Women's Literacy %
World	2,621	41	46	+5	68
Developed	8,477	49	57	+8	99
Developing	789	37	42	+5	50
N. America	11,233	36	50	+14	99
W. Europe	9,840	36	43	+7	97
E. Europe	4,480	64	69	+5	97
L. America	2,172	20	25	+5	81
Mid. East	3,046	34	25	-9	46
Far East	1,045	38	53	+15	81
S. Asia	226	40	36	-4	42
Africa	806	46	42	-4	36

Adapted from Sivard, R. 1985, Women. . . A World Survey Table III. pp. 39-41.

Education-Labour Force Participation Empirical Studies

Labour supply research and in particular labour force participation research began in the late 1950s, when Long (1958) published his book *The Labour Force Under Changing Income and Employment*. Within a Decade, the concept of labour force participation rate (LFPR) was widely used by economists and development planners. The concept gained worldwide recognition when the International Labour Organization (ILO) and the United Nations recommended that the labour force participation be included in national statistics and in population censuses (United Nations, 1967).

Since then, the literature on the subject has increased considerably. For example, an international survey of female labour force participation published in 1978 cited about 500 references (Standing, 1978, 2nd edition 1981). Many studies on the subject of female labour force participation are focused on conceptual difficulties characterize in the term 'labour force participation rate'. Applying the term to women is more complex than applying it to men,

as women's behavior in the economy and particularly in the labour market depends on the social environment more than in the case of men.

This dependency blurs the relationship between female behavior in the labour market and socio-economic variables such as, education, income, wages, etc. The conceptual problem has been discussed in the previous section, hence this section will examine the broad levels of empirical studies indicating patterns and trends of the impact of education on female labour force participation rates in different countries settings.

Evidence on the relationship between employment and education of women is complex, but most studies on the subject support the existence of a positive correlation between education and labour force participation. Harman (1970), in an analysis of individual survey data for the Philippines, found female labour force participation directly associated with education and strongly associated with age. Similarly, research results from Chile, the Philippines and Brazil show a positive relationship between female average years of schooling and labour force participation for all age groups (DaVanzo, 1972; Encarnacion, 1974; DaSilva, 1975). Elizaga (1974: 526) in women's labour force participation in Latin America also comments on the correlation between women's education and their labour force participation.

The simple positive relationship described above has been found in data from a number of countries from various parts of the world. For example, from a study conducted in Jamaica, Standing (1974) found that the probability of a woman being in the labour force in Jamaica was a positive function of education. In this study Standing used a measure of 'human capital' that attempted to incorporate measures of quality and quantity of education, 'vantage effects' and training. Standing (1981: 154-159) also found a positive correlation between female's economic activity and female's education (see table 2. 4) in her study of twenty two industrializing countries.

Other studies have also established the relationship using aggregate data. Carleton's study in Puerto Rico, despite traditional restrictions on women, demonstrated a positive correlation between women's education with economic activity for all age groups. He further shows that when a woman has sufficient education, her husband, despite institutional pressures, will permit her to work.

Carleton's analysis is confirmed by Mejia-Raymundo's (1978) data from the Philippines, which shows a higher participation rates for women with

college degrees than those with lower levels of schooling. His analysis also shows that, college education not only positively influences women's entry into the labour market, but is also an important factor in lengthening women's total years of active life and reducing the unemployment rate.

Table 2.4

The Relationship Between Schooling and Female Labour Force Participation in Selected Countries

COUNTRY	DATE	OBSERVED RELATIONSHIP	AUTHOR
Chile	1965	Positive	Peek (1975)
Chile	1960	Positive/None	Da Vanzo (1972)
Venezuela	1971	Positive	Pacht (1976)
Costa Rica	1966-7	Positive	Pacht (1976)
Mexico	1970	Positive	Uthoff/Gonzalez (1976)
Jamaica	1974	Positive	Standing (1975)
Jamaica	1970	Positive	Standing (1975)
Nigeria	1873-4	Positive	Sheehan/Standing (1976)
Ghana	1970	Positive	De Graft-Johnson (1974)
Sudan	1974	Positive	Sheehan
Yugoslavia	1971	None/Negative	Racevic (1975)
Thailand	1960	None/Negative	Maurer et al (1973)
Thailand	1972	Positive	Standing (1976)
Philippines	1968	Positive	Harman (1970)
Philippines	1968	Unclear	Encarnacion (1974)
Papua New	1970	Positive	Sheehan/Standing (1976)
Sri Lanka	1973	Positive	Pang (1974)
Singapore	1973	Positive	Anker/Knowles (1977)
Kenya	1974	None/Positive	Anker/Knowles (1977)
World (136 Countries)	1980's	Positive	Psacharopoulos et al. (1987)

Adapted: Individual countries from Standing (1981) pp.154-159. World from Psachoropaulos and Tzannatoes (1987).

Although evidence discussed in the preceding pages supports the positive relationship between education and female labour force participation, in developing countries, evidence to the contrary also exists. The relationship is likely to be strongly influenced by the level and structure of aggregate demand for labour, age, family income, marital status and fertility.

For example, Farooq (1972) in a regression analysis using alternative independent variables--either the literacy rates or age specific proportion of population (15+) with specific levels of education (i.e. grade 8 or higher and no longer in school)--found in the case of Pakistan a positive correlation between the female labour force participation rate and female education. Qureshi (1979: 223) in another Pakistan study using labour force participation as a means of reducing fertility also concluded that, ." . . in the promotion of labour force participation of women as a fertility reduction policy, the education level beyond the primary level and especially technical education are warranted." Thus, a positive correlation was found between post primary education and labour force participation.

Similar findings were noted by Standing (1978: 169) describing a study undertaken in Khartoum in Sudan which was based on a 1974 household survey. This study found that, "women, 20 to 44 years of age with secondary education, have considerably higher rates of participation in the labour force than did women of the same age with little or no education (37.5% compared to 9.2% with no formal education or 8% with primary education).

In a Nigerian study based on a national survey conducted in 1973-74, a strong relationship between education and labour force participation was observed while controlling for the influence of tribe, age, fertility and financial support (Ibid, 1978: 136). Similarly, Youssef's study (1973: 58) conducted in urban areas of Chile reported the same relationship as that of Qureshi's in Pakistan; that is, women with higher and university education had a higher rate of labour force participation than did illiterate women (61.6% compared with 33.8%), and those with primary and secondary education had a lower rate than did illiterate women. That is, they reported a U-Curve rather than a monotonic relationship (31.8% and 26% with primary and secondary education respectively compared to 61.6% with no education).

Education is also closely related to demographic factors. Tanfer (1975), explored the effects of age, marital status and fertility on women's labour

force participation and found that until the first level of education has been reached, the other factors have a negative effect on women's labour force participation.

In several other studies, positive correlations between women's education and labour force participation have been observed. For instance, various studies have documented that occupational placement and mobility in most societies increasingly depends on the completion of specific levels of formal education (La Belle and Verhine, 1975; Boudon, 1974; Blau and Duncan 1967; cited from Smock, 1981: 209-210). Pecht (1976) in this respect had noted a positive relationship between education and participation in the labour force for married women in the urban areas of Venezuela, Ecuador and Costa Rica. In these cases, somewhat like the the U-curve relations, positive relationships only exist beyond certain 'threshold" levels of schooling.

With regard to the hypothesis that education improves women's ability to move into the modern sector or non-agricultural employment, Smock (1981) noted that, "the over representation of educated women in the labour force, as compared with their distribution in the population, and sometimes as compared with males in the labour force, suggests that education is an even more significant pre-requisite for female than for male employment in the modern sector" (1981: 276). She further noted that some research on agricultural and rural development shows that exposure to education often correlates with the acceptance of innovation and sometimes increases productivity. Data from her study in Kenya also suggests that education may benefit rural females economically more than rural males (Ibid: 278).

According to Psachropoulos (1985: 589) "beyond the participation effect, several studies have shown that investment in women's education can be more profitable than that for men." He and Tzannatoes (1988: 32) suggest that in theory, education exerts a non-negative effect upon female participation. Therefore, they conclude that "if increased female participation is a desideratum then the prime policy option may be women's education."

To review the findings of research into the effects of education upon female participation is a daunting task. It not only shows a simple positive correlation between education and participation, but it also shows complex and negative correlations. For example, Maurer and his associates (1973) in

their cross-sectional analysis of census reports in Thailand, have found a negative relationship between women's education and participation in the agricultural labour force (Mauer, Ratajczaak and Schultz, 1973). Studies in India and Pakistan also show a negative relationship, although such reports are few. For example, Sinha argued that the labour force participation of women declines with literacy, but female education above the matriculation level favours higher rates of employment.

Similarly, a recent study conducted by Singhal (1984) shows a U-shaped curvilinear relationship between education and labour force participation among rural and urban women in India. That is, women with primary and middle school education had lower rates of participation in the labour force than did those with no education and post-secondary education (13.49% of primary compared to 32.88% of illiterates, 25.80% of secondary and 45.36% of university graduates).

In the case of Pakistan, Shah Nasra (1986: 346) noted that, "the existing research indicates that with the exception of some educated urban women, most of the Pakistani women enter the labour force because they have financial need. . . . In most cases, work participation is prestige-reducing rather than prestige-enhancing." Therefore, he suggests that because of these reasons women's labour force participation rates have been traditionally low in Pakistan. In another study conducted in Pakistan, Shah (1975: 479) found a negative relationship between education and female participation in rural areas; but suggests that overall there is a positive relationship beyond a "threshold" level.

A U-shaped relationship was also found in Sri Lanka survey results. However, regression analysis demonstrated that it was acquisition of secondary education which appeared to be the most important factor. A similar result was observed in the analysis of 1970 census data in Papua New Guinea, where higher level of education variables were positive in regression analysis (Standing, 1981: 151-152).

Factors Affecting Women's Labour Market Participation

Empirical studies presented in the foregoing discussion regarding women's education and labour force participation show that the issue of women's labour force participation is not a straightforward one. It is complex and varies from country to country according to socio-economic and cultural factors pertaining to each country. In addition there are socio-economic, cultural and demographic factors that may affect women's entry into the labour market either positively of negatively.

The discussion in the literature on the subject of female employment and participation in economically gainful activities, shows that they play an important role in economic development, family formation, the status of women and fertility. This is because unlike male labour force participation women's decision to enter and remain in the labour force is difficult to generalize (Shields, 1988: 121). It is subject to a complex set of factors involving economic, social, moral and practical considerations; some of which are associated with the roles that women are expected to perform in the family and in the society. Two major factors that affect women's entry into the labour market can be identified as dualism of the labour market and compatibility of employment with motherhood and fertility.

Participation in the labour force is determined by the interaction of supply and demand factors within a given cultural and institutional framework that governs the functional roles of the individual according to age, gender and other attributes (Durand, 1976). The structural transformation of the labour market in developing countries depends on the nation's economic growth and on the absorptive capacity of the different sectors of the economy for additional employment. Thus, the national economic situations and trends determine the structure and climate within which women seek and find work.

For example, Boserup (1970) has noted that in periods of unemployment and chronic underemployment, women workers are seen as a threat and as intruding on men's domain. Sinha (1965) and Durand (1976) both emphasized that in countries where an inverted U-shape pattern for levels of development prevails, female participation in labour force decreases in the later stages of development.

Further, employment oriented skills and training also determine women's entry into the labour market. In industrialized societies, women's

participation in the labour force has increased compared to their participation rate in the nineteenth century. This is primarily due to upgrading of the skill contents of jobs associated with development (Shields, 1988: 125). In developing countries, education plays an important part in allocation of jobs. Through the allocation of educational and vocational training opportunities, men are able to acquire better jobs and women remain peripheral or intermittent members of the labour force (Standing, 1981: 160) which in turn reduces women's participation.

Fertility and Female Labour Force Participation

Fertility constraints and demand for child-care time have often been considered the principal determinants of female labour force participation. A considerable body of research has been devoted to the study of the impact of female labour force participation on fertility, and those undertaken in the urban industrialized setting in developing countries tend to support the proposition that expansion of female employment would tend to lower fertility (Kupinsky, 1977a). Judith Black (1965) claimed that, "this (inverse) association between married women's work and family size is generally acknowledged to be one of the strongest, most persistent over time and space and most theoretically reasonable of all relationship recorded in the study of differential fertility."

Sociologists and economists have relied on different variables to explain this inverse relationship. For example, while economists focussed on the opportunity cost of children (income foregone by the women who are not in labour force because they are occupied in bearing and rearing children McGreevy and Birdsall, (1974), the sociological explanation focussed on role conflict. That is, on the notion that where mother and worker roles are most incompatible, an inverse relationship between female employment and fertility is most likely to appear (Dixon, 1976; Mason and Palan, 1981). Both these explanations raise the question as to what kind of employment may increase or decrease opportunity cost and incompatibility of women's roles as mothers and workers?

First, the studies focusing on the general hypothesis that female economic activity reduces fertility rates in the case of LDCs, shows mixed results. For example, in a rural predominantly subsistence economy the question of opportunity cost of children and role compatibility are

nonexistent as women can often take small children into fields or leave them in the care of older children, and in many cases small children can perform useful labour themselves. Thus, Chayanov (1966), argued that, "a peasants household's productive strength is a positive function of its size and is likely to imply high fertility."

Standing (1981: 176) in this respect reasoned that, "for a given price of child desired fertility will be a positive function of household income." Thus he could argue that,

> ...women working as unpaid family workers in domestic industries, or even in a market trading, might be expected to have higher fertility than did women who do not contribute to household income or production. . . . Because that type of work implies a low opportunity cost of activity, it allows a flexible combination of maternal and working roles, thus, increases household income, and thereby encouraging higher fertility" (Ibid).

It has been argued in the literature that an inverse relationship between women's participation in the labour force and fertility is more likely to exist if economic activity takes place outside the domestic sphere. However, the strength of such inverse relationship would still depend on the type of employment and type of job structure prevailing in the country. For instance, if the type of work generally available consisted of low level, manual labour, there would be less likelihood of an inverse relationship between employment and fertility, than if the type of job provides opportunities for occupational mobility (Tien, 1967).

In a similar vein, Dixon (1976: 297) has noted that, "the evidence of an inverse relationship between work and fertility holds true primarily for nonagricultural work in the modern sectors of town and cities." However, with regards to the location of jobs Standing (1983: 521) has raised a doubt observing that, " . . . establishing a causal relationship between more urban, modern types of employment and fertility level is problematical. More modern, and urban jobs may actually facilitate and subsidize childbearing, providing high incomes that enables women to afford children and providing maternity leave and pay."

Most studies have differentiated rural and urban employment, claiming that urbanization involves a shift from domestic to non-domestic work for women, which is relatively likely to reduce fertility. For example, in Miro and Ruth's (1965) comparative analysis of fertility in Rio do Janeiro, Panama city and San Jose, it was found that in each city employed women had fewer children than did women who were not in the labour force.

Various other studies have either found no inverse relationship between women's work and fertility in the rural areas or have found such a relationship only in the urban areas. For instance, Mario and Mertens found no relationship in rural areas in a Latin American study and concluded that, "the occupations in which women of rural and small urban areas work are still too much linked to traditional influence on fertility" (1968: 113).

Similarly, Stycos and Weller (1967), in a Turkish study, suggested that mainly in the rural society the roles of mother and worker were sufficiently compatible to make a relationship unlikely. Further, Gendell (1967) basing his conclusion largely on Indian evidence, but referring to low income rural economies in general, found that, participation had little or no influence in at least the traditional sectors of these societies. Concepcion (1974) reached a similar conclusion on the basis of her study of the determinants of fertility in the Philippines.

In addition to an inverse or no relationship, several studies also revealed positive relationships between female employment and fertility in rural areas. For instance, in Thailand Goldstein (1972) found a positive relationship between women's participation in the labour force and fertility in the country as a whole. However, there was an inverse relationship in the capital of Bangkok. Further, some studies have also found a positive relationship in urban areas. For example, studies conducted in Peru, Puerto Rico, Malaysia and Bangladesh all reported positive relationship between participation and fertility in urban areas (Carleton, 1965; Hawthorn, 1970; Fong, 1974; Chaudhry, 1974).

As to the question of child-care and the role-incompatibility hypothesis, Mason and Plan (1981) noted that the assumption of an inverse relationship violates the reality in much of the rural sector in LDCs, where children themselves often provide the child-care. In a similar vein, Oppong (1983: 564) noted that, "one of the most pervasive findings from historical and cross-cultural evidence on socialization is the extent to which children have

traditionally been cared for by siblings, grandparents and other kin." Mason and Palan in this respect concluded that if women are willing to have children care for themselves or their siblings, they may have little sense of role incompatibility in working outside the home and thus would not reflect an inverse employment-fertility relationship (1981).

The role incompatibility hypothesis was derived from the experience of modernization and transition in industrialized countries that witnessed an inverse relationship between women's labour force participation and fertility. Based on this experience, it was assumed that modernization, as it spreads throughout developing countries, would bring with it industrialization of employment and consequently an inverse employment-fertility relationship.

However, a series of studies in developing countries as discussed in the preceding section indicate that there is no consistency in the findings regarding this relationship, thus the nature of the relationship is vague and ambiguous (Kupinsky, 1977b; Safilios-Rothchild, 1977; Standing, 1978, 1981, 1983; Weller, 1984). The findings from the LDCs show that an inverse relationship is predominant in large cities but virtually absent in small towns. Cleland (1985: 239) reported that, "World Fertility Survey has failed to establish in a decisive manner an individual level effect of female employment on fertility."

Finally, it is evident from the discussion presented in the foregoing pages that in the developing countries the relationship between education and female employment appears to be complicated. There seems to be a positive relationship between education and women's labour force participation rate in the modern sector of industrialized urban areas. In addition, education exerts negative effects on fertility and age at marriage which may increase the wage employment of women prior to marriage. Further, on the social level education facilitates the breakdown of social barriers and attitudes towards participation of women in economic activity outside home.

Thus, given equal educational opportunities and adequate skills and training, education in the long run can become a significant determinant of women's entry and reentry into the labour force. It can therefore be concluded in the words of Psachropoulos and Tzannatos (1988), that "if increased female participation is desideratum, then the prime policy option may be women's education."

Summary

The review of the literature presented in this chapter demonstrates that the level of education among women contributes towards decline in the fertility rate and infant mortality rate, and it improves women's chances of participating in the labour force. However, there are studies which have reported instances where education has a positive relation to fertility behavior or factors other than education are responsible for declining infant mortality, but overall the impact of education on both fertility and child's survival chances cannot be overlooked.

Further, the role of education in improving life expectancy of infants has been demonstrated by most studies in a cross-section of studies of various countries in the world. Women's educational level can be used as a determinant of child's survival to adulthood.

With respect to labour force participation, the review of the literature shows that the question of women's labour force participation is a complex one. In addition to education there are other factors such as the structure of the labour market, economic growth, fertility rate among women of child bearing age and women's presumed gender role in a particular society that exert influence on women's participation in the labour force. However, education is the most important determinant of women's entry into the labour force.

3. BACKGROUND TO THE PROJECT AREA

The geographical area covered in this research project is located in the northern crescent of Pakistan, amongst the largest concentration of high mountain peaks in the world. The region, commonly known as the "Northern Areas", consists of three provinces--Chitral, Baltistan, and Gilgit Agency. The province of Chitral is part of North West Frontier Province, whereas the provinces of Gilgit Agency and Baltistan were created from parts of the former British-Indian state of Jammu and Kashmir.

The main area in which this research was conducted was the province of Gilgit Agency, which is divided into five subdivisions, known as: Gilgit, Hunza, Punyal-Ishkhoman, Nagar, and Yasin-Gupis. The term "Gilgit" is commonly used to denote three geographical areas. First, it is used to describe the entire Gilgit Agency, covering the above five subdivisions. Second, it is used to denote Gilgit subdivision, which is part of the Sai valley where the river Gilgit meets the river Indus. Third, it also refers to Gilgit town, a semi-urban center from where several mountain roads, including the all seasons Karakoram Highway (KKH), radiate into the surrounding valleys of Gilgit, Chitral and Baltistan; giving a central position to it. Gilgit town is also a major trade center on the Karakoram Highway linking China to Islamabad--the capital city of Pakistan. It is a major military base and adminidtrative center from where all activities--political, economic, and social--for the Northern Areas are conducted.

Landscape and Environment

The region of the "Northern Areas" is one of the most rugged regions in the world, formed where four major mountains ranges--the Himalayas, Karakorams, Hindukush, and Pamir--meet. The region was called by the ancient Chinese Buddhist pilgrims, Polo-Leh--land of mountains--but today it is known as the Trans-Himalayas.

The northern territory of the region is topped by the hump of the Pamir on the side of the border of China, and immediately south of it is the intersection of the Hindukush and the Karakoram. The Hindukush spread out south and south-west straddling Afghanistan and Chitral in the "Northern Areas" while the Karakorams arch south-east right down to the

valley of Ladakh on the Indian border. The Himalayan range begins from the valley of Kashmir and spreads over Gilgit and Diamar region, extending a little way beyond the Indus river, terminating just above the valley of Kohistan (Santiago, 1987).

Most elevation is at least 1,500 meters above sea level and more than half of the area is above 4,500 meters. The area contains nineteen peaks higher than 7,600 meters, including two of the highest peaks--the K2 (8,125m.), second to only Mt. Everest, and the Rakaposhi (7,788 m.), which are located in Baltistan and Hunza in Gilgit Agency respectively. This is one of the most glaciated regions in the world outside the Arctic and the Antarctic.

Through these mountains run the river Indus and its tributaries, such as the river Khunjerab and the river Hunza from the eastern region, and the river Ishkhoman and the river Gupis from the western region. All these rivers meet the Gilgit river, which joins the Indus near Bunji in Gilgit division. In the "Northern Areas" the Indus is a young river cutting deeply into young mountains, transporting enormous amount of water and silt.

Like mountain areas throughout the world, the "Northern Areas" display great ecological variation over a relatively short distance, both horizontally and vertically. Valleys are narrow and steep-sided, and places separated 5,000 meters in elevation may be only a few kilometers apart on the ground. Describing the unique topography of the "Northern Areas", John Biddulph, a British political agent of Gilgit Agency in the last quarter of the 19th century, noted (1938 reprinted) that,

> In no other part of the world probably is there to be found such a large number of lofty mountains within so confined a space. This immense mass of mountains is intersected by numerous deep valleys and these owing to some peculiar geological formation which I have not remarked in other parts of the Himalayas, are generally narrow at their mouths than higher up(1977:1).

Soils, rainfall, and temperature vary as per topography, aspect and elevation, shaping both natural and manmade environment. Temperatures are accentuated by the mass concentration of mountains and the aridity, which limits the growth of vegetation that can be otherwise seen on the

Rocky slopes. Below 3,000 meters, precipitation is minimal--rarely 200 mm, but it increases with altitude and at 6,000 meter the equivalent of 2,000 mm of snow falls in a year. The climate is continental, with temperature varing sharply between winter lows of -10 C, and summer highs of 40 C.

The mountain ecosystem tend to be relatively unstable, unresilient, and of low inherent productivity. The mountains are still growing, and as a result the area is still geologically unstable, and subject to sudden mudslides and rockfalls that can cut roads and irrigation channels at any time.

However, within this fragile environment there are a great variety of ecological areas upon which people of this region base their livelihoods. These includes old river terraces, fans on valley floors, slopes on valley sides, and high-elevation forests and alpine meadows. Water supplies are available from seasonal river flow, springs, glacial streams, and seasonal snow melt. Thus, meadows and forests exist where snowfall, shade, and terrain allow soils to retain some moisture; and cultivation depends on irrigation with water derived from melting glacial ice, snow and springs.

Political History of the Northern Areas

The part of Pakistan now called as the "Northern Areas" has been well known to travellers on the Silk Route since the 2nd century B. C. Hunza and Gilgit were important staging posts on the route between China and India for the carriage of silk and spices westwards and wool and precious metals eastwards (Adamson and Shaw, 1981). Buddhist pilgrims from China followed the same road from the 5th through 7th centuries on their journey to Swat where Tantric Buddhism originated, and Marco Polo travelled the Silk Route Eastward into China in the 13th cenruty.

Historically, before the invasion of Islam in the 13th Century, the entire region of the valleys of the Himalayas, the Hindukush, the Pamir and the Karakoram was a collection of small kingdoms governed by tribal chieftans. The district of Gilgit was governed by a Hindu ruler with a title of 'Ra'. The rulers of Hunza and Nagar territories were called 'Thum' which is a Chinese title meaning the governor, and the title 'hum Thum' means the Governor-General.

In the 13th Century, the first two of Muslim missionaries, Shah Buria from Persia (Iran), and Shah Wali from Badakhsan and Western

Afghanistan, brought Islam to Hunza and Nagar respectively. Both were teachers from Shia Ismaili and Shia Ithna'shari sects of Shia Islam and settled in Hunza and Nagar respectively. The influence of the conversion in these two sects of Shia Islam is evident from the fact that the population of Hunza is 100% Shia Ismailis known as 'Maulai", and that of Nagar is 100% Shia Ithna'shari known as "Shias". In contrast, the Southern valleys of the Northern Areas--Gilgit, Puniyal-Ishkhoman, and Swat valleys were converted to Islam by missionaries who were mainly Pathans belonging to the Sunni sect, and the population in these area are predominantly Sunnis rather than Shia or Ismailis. The religious sectorial patterns established seven hundred years ago are still dominant today.

At the beginning of the 19th Century, these feudal states were invaded by the armies of Kashmir, and part of the Sikh empire centered in Lahore. By 1841 a Sikh force had advanced as far as Gilgit, but when the British defeated the Sikh army in the Punjab in the first Sikh-war of 1846, the political control of Jammu, Kashmir, Astor, and Gilgit was purchased for a million pounds by Gulab Singh, the Raja of Jammu. The rulers of Punyal, Yasin, and Gilgit owed allegiance to the Maharaja of Kashmir, but later on they became an independent sovereign states under the British Rule in India. However, Kashmir's control of Gilgit, although weak remained until 1947.

From 1847, and throughout the middle of Nineteenth Century, the British explored the Karakorams from the south, prompted by the Russian advance to the Pamir in the Central Asia and the fall of the kingdoms of Chinese Turkistan. From the 1847 to 1947, twenty-four British political agents partly controlled the region with the Raja of Kashmir and Jammu. In 1947, when India and Pakistan gained independence, the princely states of the British India were given a choice of joining either of the two independent nations. Since the Gilgit Agency was still nominally Kashmir territory, it was due to become part of India when the Hindu Maharaja of Kashmir succumbed to India in October, 1947.

However, since the population was predominantly Muslim, unrest spread, hostility with Kashmir began, and the local rulers of Hunza, Nagar, Punyal-Ishkhoman, and Yasin and Gupis all sent messages of accession to the Government of Pakistan on November 26, 1947. The power of these traditional rulers remained in effect until 1974, when the power of Mirs was ended, and these states were included under the Federal Government of

Pakistan. The province of Chitral has been integrated into the North West Frontier Province and the provinces of Gilgit and Baltistan are under the Federally Administered Areas, controlled by the Government of Pakistan. The Federal Areas cover the capital city of Islamabad and its surrounding centers as the urban sector and the "Northern Areas" (Gilgit Agency and Baltistan) as the rural sectors.

In geopolitical terms, the sensitivity of the mountainous valleys goes back 2000 years to the time when the Karakoram passes were the only trade route between Rome, North Africa, the Mediterranean, India and China. Before the Muslim invasion during the eight to thirteenth Centuries, the area was under constant attacks from the Pathan tribe of Afghanistan to prevent Tibetans, Mongols, Chinese, and Kashmiri forces entering from Karakoram passes. A century ago, the British established the Gilgit Agency in order to have a defence base to prevent Russians entering into India through Central Asia. Today the area forms part of Pakistan's border with the Soviet Union and Afghanistan to the north-west, China to the north-east, and India to the south, making the area geographically and politically sensitive for the Government of Pakistan as it was before independence.

Demography and Population

The region of the "Northern Areas" is spread over 66,000 kilometers, covering about 1,030 villages all over mountain valleys. The Gilgit Agency covers the area of 28,253 kilometers, inhabiting over 306 villages. The combined population of the "Northern Areas" is about 750,000 and of these 34% (255,000) live in the Gilgit Agency. On average a village has 750 people, and a typical household has 8 to 9 members.

The overall population figures and their distribution in five divisions of the Gilgit Agency are shown in table 3.1 The area is predominantly rural as 87 percent of the rural population occupy about 99 percent of the area. Males outnumbers females in both urban and rural areas. The Lower numbers of females may reflect higher mortality rate among women of childbearing age due to a shorter average life span among these women. Forty five percent of the population is under 15 years of age. The people in the "Northern Areas" are known for a longer life expectency. An average age span of a person is about 80 to 95 years or more. Thus, the percentages of dependent population

(under 15 and over 65 years) are higher than in other rural areas in Pakistan. The population in this area is believed to be growing at 3-4% per annum. Many women bear 6 to 8 or more children each and infant mortality ranges between 150 and 200 deaths per thousand births.

Table 3. 1
Area and Population of the Gilgit Agency

Location	Area in Sq. Km.	Population in Thousands			Number of Villages
		Males	Females	Total	
Urban Gilgit	65	18	11	29	11
Rural Gilgit	7,711	27	23	50	40
Hunza	9,826	14	14	28	52
Nagar	2,844	25	22	47	73
Punyal-Ishkhoman	4.412	17	17	34	47
Yasin-Gupis	4,065	19	19	38	83
Total Rural	28,458	102	95	197	295
Total	28,523	120	106	226	306

Adapted from: Pakistan Economic Survey, 1984

The population is a complex mixture of indigenous peoples, who display a variety of ethnic origins and characteristics of the regions which border the "Northern Areas" in all directions--Caucassian, Mongolian, and Indian. A diversity of racial and cultural groups speaking five principal languages--Shinah, Brushashki, Wakhi, Khowar and Balti--and representing Sunni, Shia Ithna'shari, and Shia Ismaili sects of Islam, coexist. Thus reflecting the cultural heritage of an area at the crossroads between Central, South and East Asia (World Bank, 1987: 15).

In the Gilgit Agency, the Ismaili population comprises 43%, Shia Ithna'shari 39%, and Sunni 18%. However, these three sects of Islam are not evenly distributed in all sub-divisions. For instance, the division of Hunza consist of 100% Ismaili population, whereas that of Nagar is 100% Shias. In Gilgit, Punyal and Ishkhoman majority of the population is (75%) is Sunni, and the population of the Ghizer valley--Yasin and Gupis--is mainly Ismaili

(85%). Although, Islam is a unifying factor against outsiders, the religious differences within Islam often becomes a cause of hostility, animosity, and disruption among the population of the five divisions.

Social and Cultural Origin

Religions of Past and Present

The ancient history of the Indus valley and the Hindukush regions indicates that formerly the area must have come under the influence of the Zoroastrian religion. According to John Biddulph, "the Oxus valley having been the cradle of the religion of Zoroastrianism, the valleys south of the Hindoo Koosh are not likely to have escaped its influence. In Wakhan there are many towers and structures which are still ascribed to the worshippers of fire and the tradition of this worship still linger in Yasin" (Biddulph, 1977: 108).

Some existing remains of stone building and the usage of Sanskrit terms also indicate the presence of Brahaminic Hindu religion. Reporting on the existence of Brahaminic Hinduism in the Gilgit Agency, Biddulph (Ibid: 115) noted that,

> I have been told that when Cashmere troops first occupied Gilgit, there was in the fort a slab of stone about 3 feet long, bearing a Sanscrit inscription. My informant told me that he had made out the words, "Ishwar ling murti," or "the Lingum incarnation of Shiva," but that the rest of the inscription was illegible.

In arguing for the existence of Brahaminism in the area he further observes that,

> The names of many of the rulers and of a number of places, not only in the Indus and Gilgit valleys, but also in the Chitral valley, point to Brahaminical origin. Amongst the names of places may be mentioned *Seo* (Shiva or Mahadeo), *Shogram* (Shiva's village), *Shogoor* (Shiv's priest), and Swami (Ibid).

At present, in Hunza, the village named Nasirabad is still commonly referred to by the local people as "Hindi" which is an Indian term. Further, in the Hunza valley, at the base of Baltit a village named "Ganish" (Lord Shiva's son) is still in existence. Thus, it can be scarcely doubted that some form of Brahaminism was in existence in Gilgit before Buddhism came to the area.

When Buddhism was the prevailing religion on both sides of the Hindukush, this religion doubtlessly established itself as strongly in the southern valleys as it did in the lateral valleys of Badakhshan in Afghanistan. According to Santiago, "Buddhism held sway in this region, dominating the culture for a little under two millennia before being supplanted by Islam" (1987: 130).

Scattered through the Gilgit and Ashtor valleys are found a number of remains of Buddhist stone altars, similar to those which are so common in Ladhakh and Nepal. For example, near the village of Nowpoor, not far from Gilgit town, is a large rock-cut figure of Buddha. The remains of a large figure of Buddha also exist in the Chitral valley, on a conspicuous point near the road not far from the valley of Koost, and is still referred to as "the idol". These scattered remains attest to Buddhist influence in the area.

At present, the religion of the whole of the "Northern Areas" is Islam. As mentioned earlier, three Islamic sects--Sunnis, Shia Ismailis (traditionally known as Maulais), and Shia Ithna'sharis (generally called Shias), are predominant in the area. The date of introduction of Islam is computed by referring to names of rulers in the genealogical tables of the ruling families of Hunza, Nagar, and Gilgit. Referring to the date of introduction of Islam in the Gilgit valley, Biddulph (1977: 117) noted that,

> Tradition records the death of the Gilgit Ra with the non-Mussulman name of Shiri Buddutt, at the hands of a stranger bearing the Mussulman name of Azru, or Azor, from whom the present Ra of Gilgit, and the Thums of Hunza and Nagar, trace their descendant. Allowing twenty five years for each generation, this would place the first appearance of Mahommedanism in Gilgit at about end of the thirteenth, or the beginning of the fourteenth century - a time when that faith had already spread over the more accessible parts of Central Asia.

He gives the evidence in this respect and notes that,

> ...this exactly corresponds with the time when Islam was first introduced in Cashmere, which according to Ferista, happened between A.D. 1315 and 1326.

Although research indicates that Islam was introduced in the area as early as the Thirteenth Century, it was confined to a limited number of the inhabitants, becoming general at the end of the Sixteenth Century. Some Hindu practices such as burning of dead bodies, demon worship, and sacrifice of a goat beside a sacred stone lingered on and only becoming extinct in the last hundred years.

Languages and People

Since the area came under attack from various ethnic and regional groups, the languages spoken in various valleys have distinct ethnic backgrounds. The Gilgit Agency is divided into three linguistic areas: the people of southern or lower Gilgit valley (from Shishkhat up to Chalt) speak Shinah or Gilgiti language; Hunza proper that is, from Chalt upto Baltit (Karimabad) and west to Yasin valley is the area of Brushashki speaking people generally known as "Burusho" and in Upper Hunza from Gulmit to Khunjerab the language is Wakhi.

The ancient name of Gilgit was "Sargin". Later, the name of "Gilit" was given which was changed to Gilgit by the Sikhs and Dogra conquerors. Shinah or Shinaki, the language spoken in Gilgit is more refined than the dialects spoken in neighboring valleys. However, during the Sikh and Dogra reign a large number of Kashmiri, Dogri, Punjabi, and Hindustani expressions entered into the Shina language. Referring to the origin of the language Shinah, E. O. Lorimer, the wife of Lieutenant-Colonel D. L. R. Lorimer, Late of the Indian Army and the Foreign and Political Department of the Govt. of India, in her book entitled, *"Language Hunting in the Karakoram"*, (1989: 19) noted that,

> Shina and Khowar *(the language of Chitral)* are both members of the Indo-Iranian family of languages - possibly taking off from the present stock before the Indian and Iranian branches were

> fully differentiated - and are therefore related to Hundustani, Persian, Pashtu and each other.

The people of Hunza and Nagar are from the same stock of origin--Aryan race, and are described as being fair and ruddy complexions. According to Peter Fleming, the historian, "the people of Hunza and Nagar belong to the caste called Yashkun . . . they are hardy, handsome, cheerful race with a surprisingly European cast of countenance" (Fleming, c.f. Hamid, 1979: 85). The language used by the Hunzakuts[1] and Nagari is known as Brushashki, which is considered to be a prehistoric language. In the view of Leither (1889 reprinted 1985, Appendix 1, p. 10),

> The language of Hunza and Nagyr solves many philosophical puzzles. It is a prehistoric remnant, in which a series of simple consonantal or vowel sound stands for various groups of ideas, relationships, etc. . . . The cradle of human thought as expressed in language, whether of the Aryan, the Turanian, or the shemitic groups, is to be found in the speech of Hunza-Nagyr.

However, Lorimer (1938, reprinted 1985: 20) referring to the structure of Brushashki reported that,

> The fact is that the structure of Brushshki is utterly non-Indogermanic, non-Semitic, non-Turkish, non-Mongolian, non-anything known, and that with the exception of a few Persian-Arabic loan words which have filtered in with the coming of Islam - its vocabulary is entirely its own, awaking no echoes in the mind to aid memory, makes it a difficult language to tackle.

Thus, Brushshki is the oldest living language of the world, handed down from one generation to another, in its oral form in Hunza and Nagar. There is no grammar or written script of this ancient language available.

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[1] People of Hunza especially those who are from lower Hunza--7 to 9 miles around Baltit and Hunza river are referred as Hunzakuts. They are also referred as Hunzans, Hunzawals of Hunza. But they prefer to be called Hunzakuts. They are also known as Burusho i. e., those who speak Burshashki language.

Allahmah Nasir-al Din Hunzai--a mystic scholar from Aliabad, Hunza--with two French professors of the University of McGill participated in conducting the research on Brushshki grammar and language formation in the early 1980s. Presently, a foundation known as "Allahmah Research Institute and Foundation", established by Allahmah Hunzai in Karachi and Gilgit, is actively involved in reviving this ancient language.

The third major language of this area is Wakhi, spoken in the Upper Hunza, commonly known as Gojal valley. The people of Gojal valley are immigrants from the Afghan territory of Wakhan, who have established themselves in the mountain slopes, often 10,000 feet high. Wakhi is the language of Persian decent.

People of Gojal, though they remained beyond the Pamirs on this side of the Karakorams, have maintained social, cultural and economic ties with their counterparts in Chinese Turkistan and Wakhan valley in Afghanistan. In the 9th or 10th Centuries, with the spread of the Shia Ismaili sect of Islam, the region of Gojal became a tributary to Mir of Hunza. Though the language of the court was changed to Brushashki, the linguistic and cultural affinity remained unchanged between the people of Gojal, and the Wakhis, and the Tajiks in Xinjiang in Chinese Turkistan. Until the Cultural revolution in China, there were intermarriages between the Gojalis and the Wakhans and Tajiks. At present, with the opening of the Khunjerab pass on the Shine-Pak border, social and trade relations have been resumed.

Unlike women in Lower Hunza, Gojali women do not wear *chaddor* - a long shawl, and unlike most rural regions of Pakistan where women are generally not seen outside homes, and are strictly forbidden to talk to men or strangers the women in the Gilgit Agency, particularly Gojali women enjoy relatively more freedom.

Family, Customs and Festivals

In this area the family is the basic social and economic unit. The common family pattern is patriarchal and it retains its preeminence as the most vital bond of human association. The foster kinship[2] is common and

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[2] Foster Kinship is a bond or relation that is created, when a family adopts a child or a person as a family member or when a women accepts a child to be nourished by breast-feeding. Such a child becomes a foster kin or adopted brother or sister to other children in the family. The relation is also known as milk brother or sister.

regarded as closer than blood relations. For example, a marriage among foster relations would be looked upon on as incestuous. Extended joint families are a common family structure in the rural areas. However, the nuclear or single family patten is becoming common in the urban centers such as Gilgit town.

Marriage is the occasion for much ceremony, which differs in each valley. The Burusho (Brushshki speaking people) population of Hunza is divided into four major clans, centered in Baltit (Karimabad) and several minor clans scattered over other villages. Marriage between the clans is the rule, but outside the clan is rare. On the whole the Burusho cling to their settlements along the eight or nine miles stretch of the Hunza river below Altit. Intermarriages between Burusho and Wakhis from Gojal are not common. Again, intermarriages between Burushos and Shins of Gilgit are the exception only between royal families. The social interaction between Burusho and people of Nagar is virtually nonexistent, as centuries of rivalry have left these two communities separated in spite of common race and common language.

Child marriage does not take place in Hunza, but a girl will rarely pass sixteen or a boy eighteen year unwed. Though it is more usual for the match to be arranged by parents, young people often arrange marriage between themselves. The practice of exchange of gifts between two parties and of bride money given to the bride's parents, and that of dowry (gifts in the form of clothes, jewels and household articles) given to the bride by the groom's parents fit with Hindu customs rather than Islamic ones. The incidents of divorce, separation and family disruption are not encouraged, but they do take place and neither woman nor man is coerced against her or his will to stay married to each other. Marriages are tolerantly annulled by consent, and each party is free to remarry and hope for better luck.

A birth of a son is always a matter of general rejoicing. The village band is summoned and dancing takes place for the rest of the day. No notice is taken of the birth of daughters. Receiving of gifts from friends and relatives for the newborn (both sex) and sometimes for family members is a common custom. After the birth of a child a woman is deemed unclean and not allowed to cook or work for seven days. In some valleys north of Hindukush this period is extended for forty days. This custom also has its origin in Hinduism.

The old Hindu custom of disposing the dead body by burning is replaced by the burial ceremonies in accordance with Islamic tenets. The small flat slab of earth about two feet long is neatly plastered over the graves and a lamp is kept burning at night. Bidulph considers burning of the lamp as a Hindu relic of the old practice of cremation.

The division and inheritance of land is of great importance as the people of the "Northern Areas" live almost entirely by agriculture, and due to the scarcity of land in the mountain valleys the land holding per family is small. In Gilgit and adjoining valleys, in the event of a man's death his land is not divided equally among his sons, but in equal portion among his wives' families. Daughters are not entitled to inherit land but are entitled to have a marriage-portion (dowry) out of the land. Women are not entitled to own property--land, house, etc.--but are entitled to own fruit trees.

Polo is the national game of the "Northern Areas" and dancing is the national amusement. Feast days, births, weddings and any occasion of gathering serve as an excuse for dancing. An end of a Polo game is always celebrated by dancing. In Hunza a spirited sword-dance is performed. The old custom of mixed dancing between women and men has been discontinued in most valleys, except in Hunza.

Ancient semi-religious festivals connected with agriculture are still observed in accordance with ancient customs. The first festival is known as 'Nos', which means 'fattening'. In this festival animals--bullock, goat or Yak--are slaughtered a few days before and meat is dried in a traditional way, to preserve it for the winter months. The celebration for this festival begins a couple of hours before the day break. A bonfire is lighted and everyone flocks around with the torch (fire lighted with a piece of oiled cloth tied on a stick) in hand. At the day break these torches are thrown in the direction of Gilgit or the places around Gilgit. Singing, dancing and polo games go on throughout the day. This festival is celebrated in all the sub-divisions of the Gilgit Agency.

The next festival is called 'Bozno' which celebrates the beginning of the spring season. The literal meaning of 'Bozno' is leanness, which refers to the miserable condition of animals at the end of winter, due to scarcity of fodder. On the occasion of this festival a goat is sacrificed and blood is sprinkled on the polo sticks.

"Ganoni" is the festival for the commencement of the wheat harvest. This festival is very common even today in Gilgit and the surrounding valleys. On the evening before the day of the festival every household gathers a handful of ears of corn. Some of these ears are hung on the door of the house and the rest are roasted on following morning and eaten with milk. Then rest of the day is passed in rejoicing, and on the next day harvesting commences. Eating of corn before this festival is considered to be ill-luck or misfortune. Similarly, the festival of 'Dominika' is celebrated at the completion of the harvest season.

The last festival of the year is that of seed sowing , celebrated in all regions of the Northern Areas. This festival shows some connection with that of the Hindu festival of 'Dassehra'.

Economic Features

Life in the "Northern Areas" is a struggle for survival due to harsh geographical conditions and limited resources. Agriculture is the main industry and the principal source of livelihood for 90% of the region's population. The region is located just outside the zone of the monsoon rainfall system and in a partial rain shadow area. On an average the area receives 500 mm. of rainfall per year. The major source of irrigation is water from melting snow and the mighty glaciers of the Himalayas and Karakorams. The average cultivable land possessed by a household is about 0.6 hectares, suitable for single crop per annum. Besides cultivable land, a household owns a small number of livestock and fruit trees.

The people of the "Northern Areas" live below the poverty line, the per capita income is US$ 150 per annum, which is approximately half the national average of Pakistan. Various physical and financial constraints--lack of credit facilities, high cost of transportation, lack of fertilizer and modern technology--make it difficult for the average farmer to invest productively in their small holdings. In consequence, the productivity from agriculture is low and barely sufficient for most families to maintain a subsistence level of consumption.

The overall food production in the area is very low, resulting in heavy import of food from other areas of Pakistan. To be able to import the food for the family, most men have to go to the cities to work as laborers in the winter

months. There is plenty of barren land available but it can only be made productive by channelling water down from the mountains. This needs cooperative efforts and in the absence of any kind of infrastructure, no farmer can achieve this on his/her own.

Under the feudal system the local Mirs and Rajas were able to exercise their authorities to organize improvements in the physical infrastructure that contributed much to the agricultural development. But with the decline of feudal powers no organizational structure has yet emerged to replace them.

As feudal powers declined, and contact with the rest of Pakistan increased due to the opening of the Karakoram Highway in 1978, the rural economy of the Gilgit Agency started becoming more like that of Pakistan, that is, subsistence agriculture gradually transforming into market oriented agriculture. As in many market oriented rural economies, in the Gilgit Agency also, a handful of affluent and influential individuals started progressing rapidly, while the masses of small farmers and landless laborers remained unorganized and below the poverty line.

Individuals with special skills (and with access to capital and to state and social authority), the immigrant shopkeepers, government contractors and the fertilizer distributors all started emerging as members of a privileged group in the area. The development efforts of the state, unlike the feudal system, were directed by a distant planning process and implemented without the participation of local people, resulting in a lopsided pattern of development.

In 1982, the Aga Khan Foundation--a private organization, established a rural development project called the "Aga Khan Rural Support Programme" (AKRSP) in this area. The major objective of the AKRSP lies in improving rural economy through a program based on the principle of village level planning and local participation in identifying and maintaining the project. The main emphasis of the AKRSP in the region was to act as a catalyst for rural development, with particular emphasis on the promotion of income generating activities, which in consequence would produce equitable and sustainable improvements in the lives of the inhabitants of the region.

In the last nine years since its inception, the AKRSP has successfully implemented various income generating projects, such as, institution

building at the village level--village organization--(VO)[3], initiating productive physical infrastructure programs, extension agricultural training, marketing, agriculture credit and women's organizations. Through these programs the economy of the entire "Northern Areas" has changed from subsistence to market economy. Further, the AKRSP has managed to restore the effectiveness of the authority of village level institutions (Village Organizations), which had progressively deteriorated with the declined of the Mirdoms since 1974.

Women of the "Northern Areas" and their Role in Rural Development

The agricultural activities in the "Northern Areas" are heavily family oriented. In the division of labour, women share a major responsibility with that of men in the field, but are not treated equally with men in terms of social and economic benefits. In addition to their domestic responsibilities and child rearing, some of their activities in the field include the care of livestock and poultry, vegetable growing, weeding, wood gathering, and carrying potable water. In areas where there is substantial wool production, they also spend long hours spinning yarn.

Within the household, women participate in decision-making at different levels. Older women generally control processing of agricultural produce, and household consumption. In many household, where men are working in major cities either to earn extra money to support the family or to pursue education, the division of labour begins to erode and women's role in farming is extended to sowing, harvesting, and decision-making as well. In such households, day to day production decisions are made by women, but men have the final say in long-term decisions such as the allocation of resources to various users, or investment decisions. According to the AKRSP's paper presented at the U. N. seminar at Vienna on May 22-26, 1989,

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[3]The village organization (VO) is a co-operative, multipurpose village level organization introduced by the AKRSP. This village level organization is a mass coalition of all those residents of a village, whose common economic interest is best served by organizing as an interest group. The organization is formed around a project or activity of overriding imortance to most of the villagers. It serves as an entry point for a wide range of development activities that are undertaken jointly by the AKRSP and Villagers.

three factors that have increased the workload of women in the "Northern areas" are:

> The migration of men into wage employment also means that women have to work harder and spend more time on farming. Another factor which affects women's workload is the increasing availability of education: tasks that were previously carried out by older children now have to be done by women. A third factor affecting their workload is the rapid spread of mechanization. In some cases, while the men's workload is reduced through mechanization--for example, tractor threshing--studies suggest that women's work actually increases, since the winnowing and cleaning of mechanically threshed wheat takes longer (1989:3)

In recognition of the fact that women are playing a significant role in the development, particularly in the agriculture sector, the AKRSP perceived that a development program without involvement of women's input was unlikely to have pervasive impact on the rural development. In accordance with the glaring need for women's involvement in the development programs, the AKRSP resolved to have separate programs targeted specifically at women, based on the same principles of rural development that were followed in creating self-sustaining Village Organizations for the men.

In 1983, the AKRSP initiated a diagnostic survey[4] in order to acquire basic information regarding women's role in farm households and to determine their decision-making capacity to chart possible areas of intervention, suitable projects and methods of implementing them. The AKRSP successfully diverted their activities from stereotype 'sewing machine' activities to issues of supplies, quality control and marketing of agricultural products. The diagnostic survey led the AKRSP towards the identification of profitable ventures in agriculture for womenfolk.

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[4] An innovative rural development concept introduced by the AKRSP based on the belief that a self-sustaining development process in the rural areas can be built on the organization, skills, knowledge and capital of villagers. In practice, this concept of faith in villagers' abilities was initiated by the AKRSP through a series of interacting dialogues which are called a 'Diagnostic Survey'-- a survey to diagnose the poverty of village and identify a cure for it. It is a key tool in initiating the curative strategy for rural development.

The basic objective of the AKRSP's programing for women is to increase their productivity and, where possible reduce their workload in the tasks they traditionally perform. With this objective in mind, the AKRSP initiated separate village level organizations for women (WOs), which served as the vehicle for implementing women's projects in the area. After reviewing and experimenting several possibilities to develop viable agricultural packages to increase women's productivity, AKRSP identified three main packages--vegetable package, home-based poultry package and appropriate technology package. These programs were implemented through 248 WOs and some existing Village Organizations (VOs) by 1989.

As a result of widespread dissemination of these programs, both quantity and quality of vegetable and poultry production increased, which meant the availability of better food for consumption as well as extra income for women, as surplus produce was then marketed locally. An introduction of an appropriate technology in terms of a nut cracking machine and spinning wheel reduced women's workload and time spent on these activities. For example, with a nut cracking machine a woman can crack the same quantity of nuts in two hours that would take about two days to do by hand. Both wool and apricot nuts are important products in the "Northern Areas", for domestic as well as commercial purposes.

In addition to the implementation of agriculture packages for women, the AKRSP provided widespread training and extension programs for women at the district and village levels. Thus, the AKRSP's efforts to involve women in the process of rural development programs not only increased women's productivity in this area, but it enhanced the status of these women within the village society. Commenting on this change in the paper on 'Women in Development', Amneh Azam Ali (1989: 7) a chief coordinator of 'Women in Development' (WID) section of the AKRSP noted that,

> The fact that women are earning a cash income, and are doing so through collective organization of their work, increases their importance at both the village and household level. Though they may have been doing an equivalent amount of work previously, it was almost inevitably not recognized as 'work' and was certainly not accorded the same

> importance given to labour which earns money. The existence of such income, embodied in the collective savings account, becomes an indicator of the value of women's work.

Thus, the AKRSP's approach to rural development in the Northern Areas, has not only improved the economy and the living conditions, but it has also proved that women's role in rural development is as significant as that of men. This is the first ruraal development project in Pakistan which has recognized and involved women in the process of development.

Having examined the rural setting of the project area and the role of women in the development of the 'Northern Areas', the next chapter is devoted to women's educational development in Pakistan and in the Northern Areas.

4. WOMEN'S EDUCATIONAL DEVELOPMENT

Equal Opportunity in Education

> The education of girls is probably the world's best investment. Nothing else has such power to improve family health, slow population growth and improve the lives of women themselves(Unicef, 1991).

Development in any society implies change and any move to bring about change often involves changing relationship between individuals and their societies. Education, both formal and non-formal, is considered to be the agent of change. Therefore, it constitutes an important component in the process of development. This pivotal role attributed to education is due to the assumption that, "an educated population contributes to the socio-economic development of the society as a whole and also to the well-being of the individual within the society" (Fagerlind and Saha, 1983:3). Women's contribution in any society cannot be underestimated as they constitute 50% of the human resources and their education has tremendous potential value for economic and social development.

The institutionalization of education for children and adolescents is a major social accomplishment of this century. Access to education has been an important issue since the 1960s in all emerging nations of the developing world. Under Unesco's Karachi Plan (1962) and the Asian Development Model (1965), attention has been focused by the United Nations, other international agencies, and the national governments of developing nations on the need to extend educational opportunities to all, and to universalize at least primary education.

While educational expansion reached its zenith in most developing countries in the 1970s, statistics on female literacy rates and enrollments at all the levels of education show that equal access for women to education even at the primary level has not been achieved in most countries of Asia and Africa. For example, the enrollment of girls quadrupled during the period 1950-1985, rising from 95 million to 390 million in 1985 (Sivard, 1985: 40-41). Despite this favorable trend, two thirds of out-of-school children in Asia are girls, and nearly half the girls between ages of 6 to 11 are not in school.

Although the percentages of illiterates throughout the world, and specifically in the Indian Subcontinent, are decreasing the actual numbers of illiterates in absolute terms are increasing due to population growth (Unesco, 1984: 33). For example, in Pakistan while the percentage of illiterates decreased from 85% in 1960 to 70% in 1988, the actual number of illiterates increased from 36.46 million in 1960 to 50.60 million in 1988 (Planning Commission, Govt. of Pakistan, 1983 and 1988), and of these more than 50% are women. The higher percentages of female illiterates requires more serious policy planning to provide equal educational opportunities to women.

Women's Education in Pakistan An Overview

Historical Context

The history of education in Pakistan can be traced back thousands of years to the time of the great civilization of the Indus valley, where the Vedic system of education was prevalent. However, in the past few centuries, the influence of the Muslim rule and the British legacy on the education system is obvious. Therefore, the history of education in the sub-continent of Indo-Pak can be divided into three periods--the Muslim period, the British period, and the post independence period.

Muslim Period

Under the Muslim influence, the policy of kings was the central factor on which the progress of education depended. Most of the Muslim rulers of pre-Mughal and the Mughal period were great patrons of learning. They encouraged the translation of Sanskrit into Arabic and Persian, as well as the development of local languages--Urdu and Hindi. Muslim rulers had a liberal policy in imparting education to the native population. Education for Muslim students was provided in the accommodation allocated close to mosques and was actually the outcome of religious endowment. To others education was given in the primary schools, schools for residents and day scholars, and under a domestic system where education was provided at home. Girls from the elite families were given some basic education under a domestic system; however, mass education for females was not considered an

important activity, except learning of the Qur'an (mainly through rote learning).

British Period

During the decline and downfall of the Mughal empire, and the establishment of the British rule, the education system in the Indo-Pak sub-continent was in chaos. Prior to the Mughals, the Aryans brought from central Asia the Vedic language, thus focusing attention on Sanskrit learning; the Turks and Afghan rulers emphasized Arabic; the Mughals preferred Persian which gave birth to the Urdu language; and the British brought with them the English language and through it, Western learning and modern science. However, during the Vedic and Muslim times the learning of science was imparted through Sanskrit and Arabic to selected elite groups.

It was in 1884, under the British rule, that the need for mass education was recognized in India, but no active legislation was passed to enforce it. From 1919 to 1947 the expansion of primary education was provided by the state Government. For example, the Punjab Primary Education Act brought compulsory primary education to the state of Punjab, but its application was limited and did not affect the majority of children, due to lack of physical facilities, teaching staff, and learning materials.

Further, under the British rule the aim of education was to produce a local elite to take over lower and middle level functionaries to assist in administration and in running the machinery of government and not for the development of masses. For this purpose women were not considered suitable candidates. Hence, girls were not provided with formal education except religious education in the Mosque schools--Medresahs--to read and recite the holy Qur'an or perform domestic work at home.

Throughout the colonial period the availability of education for women lagged behind the development of educational facilities for men. Moreover, Muslims, who resented the displacement of the Mughal Empire as the paramount power in the Indian sub-continent, boycotted colonial institutions and were therefore not inclined to seek admission into the secular schools. At the end of the nineteenth century, when Muslim leaders sought to improve relations with the colonial administration and, to close the gap in the educational development of Mulsims and Hindu communities, they focussed their concerns entirely on males, because the

western secular education was not considered appropriate for women. Thus, the places for girls in the colonial school system were filled almost entirely by Hindu women.

Similarly, the role of missionaries, who promoted mass schooling as an instrument of proselytization, also reinforced the male bias, as they implicitly assumed that only males would have the authority to convert a family to Christianity and therefore, they were inclined to educate men. Thus, this calculated attitude towards female education by the British Government and Christian missionaries, combined with Victorian-style prejudices against employment of women, deprived most women in the Indo-Pak subcontinent from receiving even the rudiments of formal education.

The Post Independent Period

Pakistan inherited the education system from the British in 1947 and the system was initially geared towards the achievement of the aim discussed in the previous section, though operating under different constraints. The whole system required reform and reorientation to cater to the needs of the people of Pakistan. Recognizing such need, Mr. Fazal-ur-Rahaman, then Education Minister of Pakistan declared:

> We have before us the opportunity of reorienting our entire education policy to correspond closely to the need of the time and to reflect the ideals for which Pakistan as an Islamic state stands (Qureshi, 1975: 29).

From 1948 (after independence when the Commission of National Education was created) until 1959, no systematic aims of education were established. The education system served only to train civil servants and office workers to fill the gap in trained manpower created by departure of the expatriates. In 1960, on recommendation of the Commission for National Education, a curriculum committee was formed for primary education. However, not until 1972, when the education policy for the 1972-80 period was announced, did primary education in Pakistan take a new turn. This policy aimed at eradicating illiteracy through universalization of primary education, and also introduced certain changes such as, provision of free

education up to class eight, increased proportion of women teachers, revising the curricula and textbooks, and in-service teacher training programmes throughout Pakistan.

Although the Government of Pakistan took the total responsibility of provision of primary schools for all children, the education of girls was not given priority due to two major factors. First, the institution of Pardah (seclusion of women) which demands provision of separate education facilities for girls. Due to acute financial pressure, this demand has received a low priority in the Government policy planning. Second, a negative attitude towards women's education--social taboos and restrictive views about women's role in the society--have aggravated the problem of women's education (Unesco, 1980: 107). Describing gender segregation as the "rule rather than the exception in Pakistan", Kelly, commenting on the Pakistan Government's attitude towards girls' education, stated that

> . . . the Pakistan Government, when faced openly with the decision about what type of school to build, tends to build boys' rather than girls' schools . . . because the Government associated girls' education with reinforcing traditional values rather than with efforts towards the nation's modernization(1984: 87).

Thus, it was not until the announcement of the National Education Policy Document in 1979, four years after the United Nations' declaration of the Women's Year in 1975 and the Women's Decade from 1975-85, that women's education and development received the recognition and priority in the policy documents in Pakistan. In 1979, a Women's Division was created at the federal level to articulate policies, to prepare projects and act as a catalyst for women's development, and Women's Project Cells were created at the provincial level to help and monitor implementation. The detailed account of policies to improve women's eduction is presented in the following section.

Policies to Educate Women in Pakistan

Women's education in Pakistan, as seen from the preceding discussion, has been grossly neglected since independence. Awareness of the implications of disparities in access to education has led the Government of

Pakistan to give priority to the objective of providing equal educational opportunities to girls. The education policy planners, having recognized the problem of female education, took measures to develop strategies specifically aimed at the expansion and improvement of education for females with greater focus on rural communities. For example, the Government of Pakistan made a special mention of the importance of female education in the National Education Policy Document, and one of the aims of this document guarantees to provide and ensure equal educational opportunities to all citizens of Pakistan (Pakistan Ministry of Education, 1979: 1). The document also states that,

> The society at large can only reap fruits of its efforts to the extent it has invested in the education of its females (Ibid, 20).

Further, it was stated in the same policy document that, "provision of certain minimum level of educational facilities for each female citizen is the duty of an Islamic state. It is also proper for upbringing of future generations. Investment into basic education of female masses should therefore, be a matter of highest priority."

Moreover, recognizing the importance of women's contribution in the national development, the Sixth Five Year Plan 1983-88 stated that, "in all societies women's development is a pre-requisite for overall national development. Indeed, no society can ever develop half-liberated and half-shackled" (Pakistan Planning Commission, 1983: 19). In order to improve women's contribution in the National development, priorities and objectives have been set up in the Sixth Five Year Plan to improve women's literacy by launching a massive literacy program for 15 million adults (5 million males and 10 million females). The Plan projected to increase the literacy rate from 13.9% to 47% by the end of the plan period.

Similarly, the Seventh Five Year Plan 1988-93 has set priorities to integrate women into the development process through the provision of full equality of opportunity in education, health, employment and all spheres on national life, is reflected in the several objectives set by the Plan (Planning Commission, Govt. of Pakistan, 1987: 281) as :

> In the education sector, the objectives are to make education for women a planned and sustained process; to replace the outmoded value system, based on inequality, with a new value system which emphasizes equality, mutual respect and dignity among members of both sexes; to remove disparities in the provision of educational facilities for women in the different regions of the country; to develop a network of educational institutions and undertake planned programmes and activities for their proper development; and to provide them opportunities for studies in various branches of learning, including the physical and social sciences, as well as a wide range of vocational, technical and professional subjects, similar to the facilities available to men.

Thus, since 1979, increasing efforts have been made by the Government of Pakistan to improve educational opportunities for females. All the above policies and programs have had far reaching changes in the position of women and some gains in women's eduction in Pakistan have been made. However, inequalities in the educational opportunities for women are pervasive and disparities in terms of access, survival rate and gender differences by field and content, as well as socio-economic outcomes do exist in all provinces.

Women's Access to Education

One very serious problem with regard to the institutionalization of education is uneven educational development and gender inequalities that have had significant repercussions for women's economic roles in the society. Access to education "measures proportion of the members of eligible group who enroll in a particular education level on programme" (Smock, 1981: 38). The common source of difference in the coverage of the educational system among various sub-groups of populations may be due to gender, class, origin, language, ethnicity or a combination of these characteristics. The overall effect of access to education can be measured in terms of adult literacy rates, patterns of enrollments and continuation rates. The nature of educational programs and curriculum options also provide, to a certain extent, difference in access to education. Disparities among these measures have implications

for the larger participation of women in the process of development. How these measures affect women's participation in education in Pakistan is the focus of the rest of this section.

Female Literacy

The question of world literacy in general and literacy in developing countries in particular, is urgent for there are about 814 million illiterates (aged fifteen and over) in the world. The distribution of adult literacy provides an index of past educational opportunities in a given society. Education in the modern world is a prerequisite condition for a fully productive role in the society both for men and women. Therefore, a adult who can neither read nor write is unable to participate fully in modern life. Thus, the literacy percentage has now come to be accepted as an indicator of the socioeconomic development of a nation.

At the Twenty-First Session of the Unesco General Conference held in Belgrade in September-October 1980, the eradication of illiteracy was recognized as a matter of urgency. The conference stressed the importance of primary education and the promotion of adult education (Lesgate, 1982). The Unesco Medium Plan (1984-89) proposed a new approach in reducing the number of illiterates. One of the important areas of concern was to be assistance in implementing national, regional and international strategies for improving access to primary education, especially in favour of disadvantaged group such as girls and women (Unesco, 1984).

In view of the fact that literacy occupies such an important position in one's life as well as for a nation, it is essential to examine the concept of literacy and its importance for the development of women, before reviewing the situation of female literacy in Pakistan.

Generally, literacy means the ability to read and write. It is variably defined as "the ability to read, the ability to write or the completion of any schooling, and comprises a kind of summary indicator of very minimal access to education, usually formal but sometimes non-formal" (Smock, 1981: 40). The concept of literacy, like that of development, has undergone considerable revision in the last four decades. In 1975, at the International Symposium on Literacy sponsored by the Unesco in Iran, literacy was conceived as " . . . not just the process of learning skills of reading, writing and arithmetic, but a

contribution to the liberation of man and to his full development" (Batile, 1976: 273-275).

However, within the development perspective, the importance of literacy has been perceived by the Unesco's Draft Mid-term Plan as:

> . . . a vital element in any development strategy since it makes it possible to give individuals and communities the knowledge and know-how that. . . will enable them to act more effectively themselves in improving productivity, hygiene, health and general living conditions and in exercising civic rights(Unesco, 1982: 67).

Therefore, literacy plays an important role in each individual's life and by acquiring the literacy skill each individual begins to become a full and active member of his/her culture (United Nations, 1984).

The concept of literacy has also undergone considerable revision during the period of the last four census in Pakistan, which has affected the literacy rate in the last four decades. In 1951, a liberal definition of literacy as the "ability to read any clear print in any language" was used and comprehension was not a condition attached to the definition. In 1961, a parameter was added to the above definition of literacy which was defined as, "the ability to read with understanding in any language". In this definition writing ability was not included. In 1972 the definition was "the ability to read and write a simple letter in any language. In 1981 the criterion became more precise as "the ability to read a newspaper was added to the above definition of "the ability to write a simple letter in any language" (Pakistan, Ministry of Education, 1983: 43).

A few surveys have been carried out in Pakistan with regard to determining the educational opportunities available to both sexes. However, at the national level some data for male and females educational attainment and their ratio in urban and rural areas is available from census reports. Since the creation of the State of Pakistan four census reports have been carried out which show minimum increase in total literacy rates over the period of three decades. The literacy rate in 1951 was estimated at 16.4% which came down to 13.6% in 1961. The lower rate of literacy in 1961 census was due to a change in the definition of literacy as "the ability to read and

write a simple statement with comprehension." According to this definition a large number of people who could read the Holy Qur'an were not considered literate, hence the lower percentages of literacy.

In 1972, the literacy rate was estimated at 21.7% and in 1981 the percentage of literate population increased to 26.2%. The literacy rates by gender and urban-rural residency are presented in Table 4. 1. It is evident from the table that more females are illiterate than men at the national level as well as at the urban and rural levels. Moreover, a difference between urban and rural women's literacy level amounts to 30% which is significantly higher than the difference between national female literacy rate and that of rural women (8.7 %).

Table 4. 1
Literacy Rates in Pakistan

Regions	Both Sexes	Males	Females
Total Pakistan	26.2	35.1	16.0
Urban	47.1	55.3	37.3
Rural	17.3	26.2	7.3

Adapted from: Pakistan Planning Commission, Seventh Five Year Plan 1988-93 and perspective Plan 1988-2000, Islamabad, 1988:252.

Having recognized the importance of a literate population, the Government of Pakistan in the Sixth Five Year Plan 1983-88 allocated Rs.750 million for a massive literacy program. This program proposed to cover 15 million adults of 10 to 19 years olds (5 million males and 10 million females) by the end of the plan period. In view of the catalytic role of women in rural societies and the need to reach rural population, high priority was given to women in rural areas. However, by the end of 1988 only 0.8 million adults were covered and the literacy rate improved from 26.2% in 1981 to 30% in 1988. Moreover, the Seventh Five Year Plan has estimated to add 12.5 million to the existing 23.2 million literates by the end of the plan period, by universalizing primary education. Accordingly, the literacy rate is expected to increase to 40% by the end of the plan period and to 80 % by the end of the century.

Female Enrollment Rate

Patterns of enrollment are another measure which can provide an insight into historical trends and differences in educational opportunities at various levels of educational programs. Increasing participation rate of school age population, specially for girls, has been a perpetual problem in Pakistan. According to the Sixth Five Year Plan overall participation rate of primary school age population improved from 17% to 48% during the thirty five years since independence; the female participation rate remained far less than the average (Planning Commission, 1988: 337-338).

One example of disparities and inequalities is to be found in the provinces of Pakistan in regard to the enrollment of girls. For example, Baluchistan and the Federally Administered Tribal Areas (FATA) are reported to enrol no more than 11% and 7% respectively of their school age population in primary schools, while the total male and female primary enrollment is 32 % and 30% respectively (Bray, 1983: 169).

Table 4. 2
Participation Rates at Primary Level
(percentage 1960-88)

	1955-60	1960-65	1965-70	1970-78	1978-83	1983-88	1988-93
Total	26	28	40	50	48	63.5	79.7
Boys	42	44	60	66	63	79.5	88.5
Girls	9	11	19	32	32	45.7	70.3

Adapted from: Pakistan. Planning Commission. Sixth five Year Plan 1983-88, and Seventh Five Year Plan 1988-93. Islamabad.

Disparities in the level of participation in Pakistan between boys and girls from the years 1960 to 1988 are presented in Table 4. 2 and from the base year 1983-88, projections made in the Seventh Plan over 1988-93 are also presented. It is evident form the table that only 26% of school age population were enrolled in 1960, which reached to 48% at the end of Fifth Five Year Plan period. In 1983 the Government launched a major reform in education through the Action Plan for Educational Development, which focused its

attention on increasing primary enrollment from 48% to 75% and the literacy rate from 27.2% to 50%. However, by the end of the Sixth Five Year Plan period the primary enrollment reached only 63.5% and the literacy rate only 30%.

Further, it can be seen that the participation rate for boys since 1960 has increased from 42% to 79.5% in 1988 and that of girls from 9% to 45.5% in the same period. Even though girls' enrollment has increased about 400% during this period, the disparity of participation rate between boys and girls remained 45.5% among school age girls against 79.5% in boys. This implies that nearly 34% of boys have more access to formal education than girls of the same age group. Even the planned increase of girls enrollment to 70.5% in 1993 will fail to bring equal opportunity of education to girls, for the difference of 18% between boys and girls' enrollment will still remain to be covered. Thus, it is clear that female literacy in the year 2000 will continue to lag behind that of males. From the above discussion it is clear that women's education in Pakistan poses a serious problem.

Table 4. 3 presents further disparities between urban and rural boys and girls. One of the factors that hampers women's access to education is the place of dwelling. In developing countries, the education expansion was concentrated in the urban sector; that brought earlier access of schooling to urban females then to those in rural areas as denoted by participation rates. Pakistan is no exception in this respect, as can be seen from the Table 4 .3 that 37.2% of rural females had access to schooling in 1988 compared to 68.3% urban females. From this it can be inferred that urban girls had two times more opportunity to enter into formal schooling than rural girls.

Table 4. 3
Gender and Urban Rural Participation Rate in Pakistan
(Primary Level Percentage, 1983-93)

Regions	1982-83	1987-88	1992-93
Total	48	63.5	79.7
Urban	42	77.4	86.7
Rural	40	58.2	77.0
Boys (Total)	63	79.2	88.5
Urban	77	85.7	93.1
Rural	58	77.2	86.8
Girls (Total)	32	45.7	70.3
Urban	68	68.3	80.0
Rural	20	37.2	66.6

Adapted from: Pakistan. Planning Commission. Seventh Five Year Plan 1988-93 and Perspective Plan 1993-2000. Islamabad, 1988: 246.

Further, extending the discussion of disparities to gender in the rural areas reveals that compared to rural boys, girls are underrepresented in education. It is clear from the data presented in the above table that, during the five year period from 1982-83 to 1983-88 boys enrollment increased by 19% compared to 17% among rural girls. Despite this 17% increase for girls, less than 40% of rural girls participate in primary education, whereas 77% of rural boys are enrolled in primary education. Once again it can be concluded from the above statistics that female literacy which is already low in the rural areas will continue to remain a major problem in Pakistan and at this rate reduction of illiteracy will also remain an elusive goal even by end of this century.

Secondary education is of vital significance for the consolidation of the gains of primary education and for making them permanent. At the individual level, secondary education is more important than is primary education as it is the terminal stage of education for a large number of

students, at the end of secondary education enter into the labour market. The participation rates in secondary education by gender from 1960 to 1988 are presented in table 4. 4 Further, the table also represents overall projected enrollment rates for 1988-93 period.

Table 4. 4
Participation Rates in Pakistan
(Secondary Level Percentage, 1960-88)

	1955-60	1960-65	1965-70	1970-78	1978-83	1983-88	1988-93
Total	11	12	17	20	21	25.7	35.3
Boys	19	20	26	30	29	35.0	--
Girls	3	5	7	11	12	16.0	--

Adapted from: Pakistan. Planning Commission. Sixth Five Year Plan 1983-88, and Seventh Five Year Plan 1988-93. Islamabad.

The analysis of the data presented in this Table 4. 4 shows that overall only one-fourth of the secondary school age population participated in secondary education in 1988, which implies that of the 48% of the primary enrollment in 1978-83 (Table 4.2), about 53.5% entered secondary schools while remaining 46.5% did not continue their education at this time, thus reducing their chances for finding gainful employment. Moreover, the Seventh Five Year Plan has projected to increase the overall secondary enrollment from 25.7% to only 35.3% which still leaves nearly 65% of secondary school population out of schools.

Further disparities between boys and girls are obvious from the Table. For example, the participation in secondary education among boys increased from 19% in 1960 to 35% in 1988. Whereas, female enrollment for the same period increased from barely 3% to 16%, which means that girls are more than 50% underrepresented in secondary education than were boys. From the discussion, it may be concluded that despite herculean policy measures taken by the Government to remove discrimination against women, the goal of equal opportunity in education in reality is still far from realization even in the next century.

According to the Sixth Five Year Plan the availability of secondary schools in the rural areas of Pakistan is a major problem in increasing secondary enrollment both for girls and boys. For example, the plan indicated that, there were 60,000 primary schools available in the rural areas compared to 6000 secondary school at the beginning of the plan period (Planning Commission, 1983: 343). This means that one out of ten students who complete class v has any chance of studying beyond class v, unless they leave their homes to stay in hostels. In view of the prevalent indifference of most rural parents towards the education of their children coupled with their financial limitations, the chances of many students, specially females leaving their homes to receive education are very remote (Ibid).

The lack of availability of physical facilities in rural areas is reflected in the participation rates for urban-rural and male-female presented in Table 4. 5 For instance the overall participation rate at the middle school level in the urban area was 59% compared to 22% in the rural areas. The condition for rural girls is still worse than boys as only 8% of rural girls had the opportunity to enter into secondary schooling in 1988 compared to 45% urban girls in the same year.

Similarly, the disparities between boys and girls within rural areas is also significantly high. For instance, the participation rate for rural boys increased from 23% to 34%, while for girls the increase was only 4%. This implies that about 92% of middle school age population of girls in 1988 were out of school. The situation for girls in high school level is even worse as only 2.5 % of this age group had access to secondary education.

Despite the government's serious attempt to improve secondary education in rural areas reflected in policy documents since 1983, it should be noted that the history of educational development in Pakistan tends to show that planned targets, over five year periods since the First Five Year Plan (1955-60), have rarely been met. Accordingly, even treating the figures presented in this section, (i.e.1992-93 projections), with a high degree of optimism, one can only predict that half the female population of primary school age and less than 35% of secondary school age in the rural areas will participate in formal schooling. Therefore, it is clear that female literacy will continue to be a major educational problem in Pakistan. The implication of this statement is that the repercussions of continuing female illiteracy will be reflected in women's economic contribution to national development.

Table 4. 5

Urban-Rural Participation Rates at Different Levels of Education by Gender

Regions	Participation rate 1982-1983			Participation rate 1987-1988		
	Males	Females	Total	Males	Females	Total
A. Participation Rates in class vi-viii						
Total	35	14	26	44	19	33
Urban	64	39	52	71	45	59
Rural	23	4	15	34	8	22
B. Participation Rates in class ix-x						
Total	21	8	15	26	12	20
Urban	49	27	39	52	36	45
Rural	10	1	6	16	2.5	10

Adapted from: Pakistan. Planning Commission. Sixth five Year Plan 1983-88, and Seventh Five Year Plan 1988-93. Islamabad.

Women's Education in the Northern Areas

History of Education

Compared to the development of the education system at the national level, education in the Northern Areas is still in its infancy. In addition, it is faced with all the usual problems of rural education experienced by other developing nations. Formal education in the area began with the establishment of the first school less than fifty years ago. Historically, this area was ruled by Hindu Maharajas and Muslim Mirs. During that time, education was not considered as an important activity and therefore it was very much neglected. There were few primary schools functioning at Gilgit and Sakardu in Baltistan. At that time no school existed in Hunza, Punyal, Ishkoman, Gupis or Yasin.

It was as late as 1946 that the first school was established by Sir Sultan Mohammed Shah, Aga Khan III--the spiritual leader of the Shia Ismaili Muslim community--who established schools in East Africa, India and Pakistan, to mark his Diamond Jubilee as the 48th Imam of Shia Ismailis. In common with other Shia Muslims, Ismailis affirm that after the death of Prophet Muhammad, Hazrat Ali, the Prophet's cousin and son-in-law became the first Imam and the spiritual leader of the Muslim community. This leadership is known as 'Imamat', continued thereafter by hereditary succession through Ali and his wife Fatima, the Prophet's daughter. Imam Sir Sultan Muhammad Shah was the 48th Imam of the Ismailis, in direct lineal descent from Prophet Muhammad. He was the grandfather of the present Imam of the Ismailis--His Highness Prince Karim Aga Khan IV.

In 1946, the late Aga Khan III, Imam Sir Sultan Muhammad Shah completed 60 years of his Imamat. To mark this auspicious occasion, Ismailis in India, and East Africa celebrated the Diamond Jubilee of his Imamat by presenting him with diamonds equivalent to his weight. The fund raised by the Ismaili community was known as the 'Diamond Jubilee Fund'. With this fund, the diamonds were purchased and an actual weighing ceremony took place in India and East Africa. The Imam presented these diamonds back to the Ismaili community for development projects. With the capital raised from the sale of diamonds back to the community, an entire network of schools, hospitals, co-operative banks, and trusts were established in India, Pakistan, and East Africa. Hence these schools in India, Pakistan and East Africa are known as Diamond Jubilee or Aga Khan schools.

Observing the great need for providing formal education to Ismaili children of the Northern Areas, 42 primary schools and one middle level school were opened in October 1946, from the Diamond Jubilee Fund contributed by the Ismaili community. Initially these schools were controlled by Mir Mohammad Jamal Khan, then Mir of Hunza, who was the President of the Aga Khan Supreme Council for Central Asia. About 50 teachers were appointed to run these schools, however, most of them were high school graduates, having no teaching experience or teacher training qualifications.

The schools were administered by an independent body of inspectors, consisting of two persons--one for Hunza and one for the rest of the Gilgit Agency. These inspectors were accountable directly to the state system of the Mir of Hunza. However, after the abolition of the Mirdom in the 1970s, the

education system which was under the rule of Mir was taken over by the Ismaili community's education network of Pakistan, known as "His Highness Prince Karim Aga Khan Shia Imami Ismailia Central Education Board for Pakistan", generally known as the Central Education Board (CEB).[1]

Presently, the Aga Khan Education Services (AKES)[2] under the umbrella of the CEB, has the largest net work of Diamond Jubilee Girls (D. J.) schools all over the Gilgit Agency, including the province of Chitral and Baltistan. Approximately 90% of girls in this area are enrolled in Diamond Jubilee (D.J) Schools operated by the AKES. In addition to D. J. Girls' schools Government schools enroll 10% of school age girls in the area. Therefore, the focus of this study in an analysis of the education system is D. J. schools. Another reason for such focus is the availability of most recent statistics on female education from AKES, and lack of such information from the government department, except from the census report of 1981. Since the education system in Pakistan is centrally controlled by the Ministry of Education, the analysis could be applicable to government schools as well.

Access to Education

Adult Literacy

Being isolated physically due to the impassable mountains, and politically due to the local statesmanship of Mirs and Rajas until the opening of the Karakorm highway and the abolition of the Mirdoms in the 1970s, the region was excluded both from the initial Five Year Economic Development Plans of the government of Pakistan, and from the educational development strategy. It was not until the Action Plan for Educational Development in

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[1] Central Education Board for Pakistan (CEB): One of the national organizations operating in the field of education, under His Highness Prince Karim Aga Khan Shia Imami Ismailia Federal Council for Pakistan. The Board is part of a world-wide network of educational organizations of the Ismaili community. Its major objective is to impart basic education through primary and secondary schools in order to improve the quality of life of people. The CEB is in charge of all D. J. Schools in Pakistan.

[2] The Aga Khan Education Services (AKES) was founded in the early 1980s with the objective of complementing and supplementing national efforts in the field of education. The AKES consists of a network of educational institutions and programs in many developing countries. The AKES in Kenya, Tanzania, India, and Pakistan consist of over 300 educational institutions from day care in rural India to secondary schools, students hostels, and specialized projects such as schools of commerece in Dar-es-Salam; special school for deaf and dumb in Nairobi and Mobasa; Aga Khan University and medical school, schoolol of Nursing and Institute of Education Development in Karachi.

1984 that the area was included in the development strategy and educational planning programs of Pakistan, and even then it received minimal attention. For example, it was only in the Sixth Five Year Plan 1983-88 that some resources were allocated in the national budget for the improvement of economic and educational growth in the Northern Areas. Thus, access to education even for boys in the Northern Areas was not on the priority list of the government's development plans, hence access to education for girls was not even considered till very recently.

This deprivation of girls' access to education is visible in the adult literacy rates particularly in the case of rural females, presented in Table 4. 6. The glaring disparities between gender and regions is evident from the table. For example, overall 28.61% of males had access to education compared to only 5.48% of females.

Table 4. 6
Adult Literacy Rates in the Gilgit Agency
(Gender and Regions)

Regions	Both Sexes	Males	Females
Total	11.09	28.61	5.48
Urban	37.67	48.19	14.76
Rural	14.81	24.44	4.18

Adapted from: 1981 District Census Report of Gilgit. Population Census Organization Statistic Division, Government of Pakistan, Islamabad, 1984: 33.

The literacy ratio between male to female was 5:1 in the Gilgit district, and only 4.18% of rural females had access to education, compared to 24.4 % of males. That is, in the rural areas w the male to female ratio is 6:1. Similarly, the literacy ratio between urban and rural males was 2:1 and between urban and rural females ranges 3:1. Thus, from the above census data it can be concluded that rural women are the most disadvantaged group as far as access to education is concerned, for the literacy rate is an important indicator of access to education.

A similar conclusion can be drawn by comparing female literacy rates at the national level to the Gilgit Agency as the literacy figures at the national

level are 37% and 7% in the urban and rural sectors as that of 14% and 4% in the urban and rural sectors of the Gilgit Agency respectively.

Further, the literacy rates among five divisions of the Gilgit Agency are presented in Table 4. 7 shows significant disparities between males and females but also among rural sectors in the Gilgit Agency. For example, literacy among males in five sub-divisions ranges from 15.82% in Nagar to 36.85% in Hunza, and that of female literacy from 1.18% in Yasin-Gupis to 9.36% in Hunza. An interesting point may be noted here that among all five sub-divisions, Hunza has the highest number of literate males as well as females, which out numbers even total percentage of rural literacy among males (26.2%) and females (7.3%) in Pakistan.

Table 4. 7
Adult Literacy Rates in the Rural Areas of the Gilgit Agency (1981 Census)

Rural Areas	Both Sexes	Males	Females
Gilgit	17.28	27.83	4.41
Hunza	23.35	36.85	9.36
Nagar	11.35	15.82	2.25
Punyal-Ishkoman	14.52	24.62	5.30
Gupis-Yasin	9.65	16.60	1.18

Adapted from: 1981 District Census Report of Gilgit. Population Census Organization Statistic Division, Government of Pakistan, Islamabad, 1984: 35-40

The disparities in level of literacy in the Gilgit Agency may be attributed to religious norms that either enhance or hinder females' access to education. As mentioned in an earlier chapter, the Gilgit Agency is predominantly a Muslim society, where three sub-sects of Islam--Sunni, Shia Ithna'ashari and Shia Ismailis--exist side by side. In Hunza, which has 100% Ismaili population, female literacy is higher than any other area. The major reason for this lies in the fact that Ismailis, following the directive of their Imam (the spiritual leader), readily accepted the importance of formal schooling and made possible first for boys to attend schools, followed by girls as schools for girls were made available. Commenting on rural to urban

migration trend in males of Northern areas the World Bank's report (1987: 17) noted that, "Ismaili boys, in particular are sent away for secondary and post-secondary education, many as far as Karachi." However, at present, many Ismaili girls with financial support from the AKES, are sent to Islamabad for higher education.

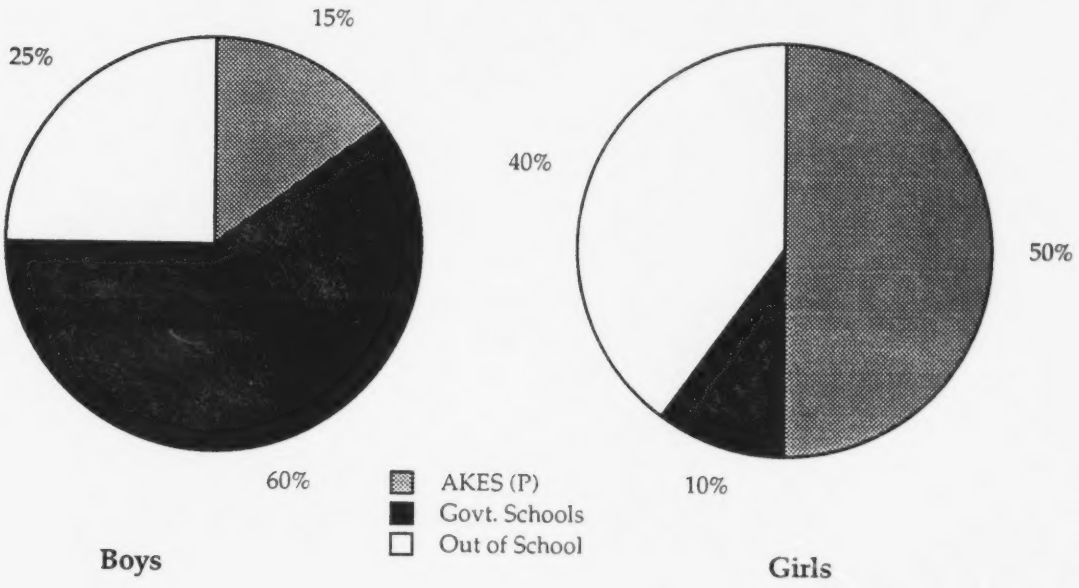
Compared to Hunza, in the sub-division of Nagar, female literacy rate is only 2.2% despite the fact that these two divisions share the same linguistic and racial and geographical origin. The main reason for this disparity is sectorial difference in religious belief. The population of Nagar is 100% Shia Ithna'ashari, which believed only in the recitation of the Qur'an as a major educational activity. Hence, formal schooling was not considered as an important activity in women's lives, which discouraged the opening of formal schooling for girls. Further, unlike Ismaili women in Hunza, females in Nagar are secluded from having any contact with men other than family members, which also contributed to low female literacy level. A similar reason is applicable to low literacy rate in Sunni population in the sub-division of Gilgit. In Yasin and Punyal despite of 85% Ismaili population the female literacy rate is low, which is due to the fact that until 1974, these regions were under the control of Sunni and Shia Ithna'ashari rulers who discouraged female education.

Enrollment Rates

Enrollment and continuation rates are two indicators which determine an access to education for the particular age group in a given society. Access to education in the Gilgit agency by females can be assessed by examining their enrollment and retention rates at various levels of education in two types of educational institutions.

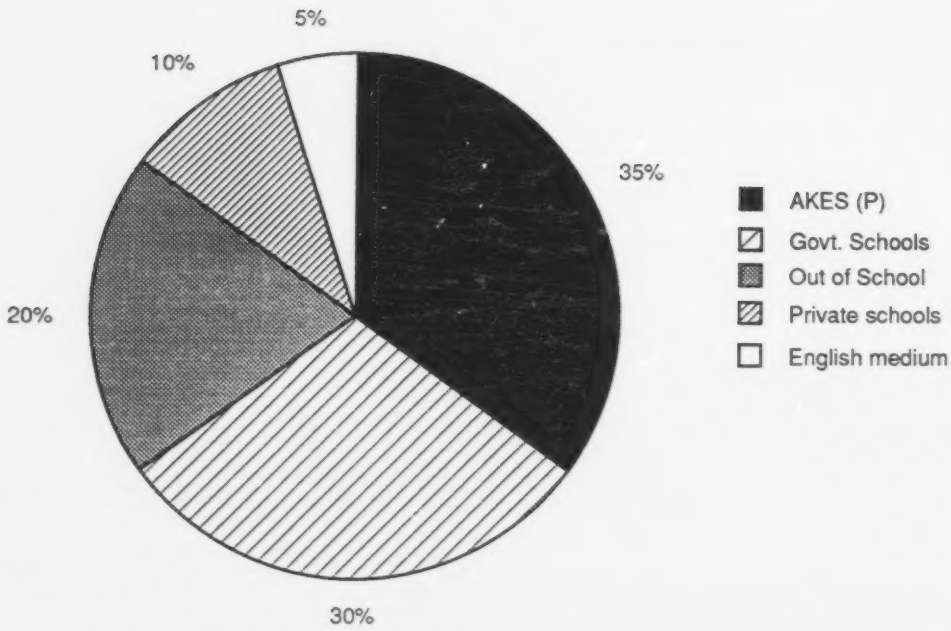
Schools in the Gilgit Agency are divided into two major groups--Government schools and Diamond Jubilee Schools. However, a small number of private English medium schools at the primary level are also in existence. The majority of students are enrolled either in government schools or in D. J. Schools. The majority (84%) of the Govt. schools are boys schools, whereas, the D. J. schools are primarily girls schools but have boys enrolled at the primary level. These enrollments are reflected in Figure 4.1

Figure 4.1
Students Participation Rate in Northern Areas



As can be seen from these graphs overall, 60% of boys are enrolled in Government schools, 15% in D. J. Schools and about 25% are out of school. Similarly, 50% of girls are enrolled in the D. J. School, 10% in Government schools and 40% are out of school. More girls (40%) are out of school than are boys (25%).

Figure 4. 2
Distribution of Participation Rate
Primary Education



The overall distribution of participation rate at the primary level is presented in Figure 4. 2. which shows that 30% of primary school age population is enrolled in Government schools, 35% in D. J. school, 5% in English medium schools and about 10% in private schools.

The distribution of enrollment rates for girls and boys in the D. J. and Government schools in five sub-division of the Gilgit Agency are presented in the Table 4. 8. The total number of students enrolled in these schools were 12,890 in 1989, of which 7,361 (57%) were boys and 5,539 (43%) were girls. Further, comparison between sub-divisions show that Gilgit has the highest enrollment of boys and Hunza that of girls. The major reason for such high enrollment is that in both these divisions there are more primary schools available, as the development of education commenced first in Gilgit and then in Hunza. Compared to Gilgit and Hunza, the enrollment for both boys and girls in the two remote rural sectors--Yasin and Gupis--are very low, due

to a non-availability of schools and because of underdevelopment of these area compared to Gilgit and Hunza.

Table 4. 8

Participation Rates by Gender (Primary Level)

Sub-divisions	Govt. Schools		D. J. Schools		Total	
	Boys	Girls	Boys	Girls	Boys	Girls
Gilgit	2319	288	570	1048	2889	1336
Hunza	513	565	1181	1291	1694	1856
Punyal-Ishkh.	1111	--	191	1272	1304	1272
Yasin	369	--	724	531	1093	531
Gupis	207	--	374	544	581	544
Total	4419	853	2942	4686	7361	5539

Adapted from: Aga Khan Education Service. Statistical Division. 1989.

Continuation Rates

A negative feature of access to educational opportunities in many developing countries is the low rate of retention. A major loss in the number of students occurs in the first three or four years of school. Four years of primary school is not enough to become literate or to obtain any lasting benefit from schooling. However, despite the large enrollment of girls at the primary level, their dropout rate increases as they ascend the level of education. For example, of 1278 girls enrolled in grade I in D. J. schools only 810 complete the primary level; 488 reach to the middle school level. Thus, less than 40% of girls reaches to the point of transition from middle to high school education, and of these only 10% come out as high school graduates.

Schooling facilities at the secondary level are very limited both for girls and boys. Many parents send their sons to attend secondary schools in Gilgit or Karachi but this is not the case with many girls. Thus, local access to educational institutions for girls particularly at the secondary level is the crux of the problem of women's education in this area.

Problems of Female Education in Rural Settings

Education development in the rural sector in many developing countries is characterized by a lack of sufficient institutional facilities and the quality of education in terms of qualified teachers. The education system in Pakistan is centralized and the system is divided into three strata. Primary education covers the first five years of schooling, middle school education covers the next three years, and high school covers two years.

Like most LDCs, educational facilities are not evenly distributed between the urban and rural sectors in Pakistan. It is in the rural sector such as mountainous valleys in the Northern areas that the shortcomings of the educational facilities in terms of quantity and quality are most evident. The quantity of education in this study is examined through provision of schools and facilities available in these schools, whereas the quality is reviewed in terms of qualified teaching force and the relevance of curriculum to the needs of rural people and rural economy.

Problems of Availability and Accessibility

As noted earlier, formal education in the Gilgit Agency is a recent phenomenon, therefore the expansion of the education system has not reached its fullest capacity compared to other rural areas in Pakistan. A major constraint in the case of the Northern Areas was its physical and political isolation from the rest of the country until the mid 1970s when the Govt. of Pakistan abolished the Mirdoms and took political control of the area, and the opening of the KKH physically opened the area to the rest of the country.

Two major factors that inhibit women's access to education are availability and accessibility to educational institutions. The availability of education can be assessed in terms of number of schools at various levels of education that are provided to school age population. On the other hand accessibility can be assessed in terms of willingness to utilize such facilities, effectiveness of teaching methods, the quality of teachers, and the relevance of curriculum to rural needs and rural economy.

There are a total of 218 schools scattered throughout the five sub-divisions of the Gilgit Agency. Of these 139 schools are girls schools and 79 are boys schools. The distribution of schools in the three levels of education is presented in Table 4. 9 which shows that, at the primary and middle levels girls have better availability of formal education as there are more girls

schools than boys schools (68% at primary and 67% at the middle school education). However, the same is not the case with secondary education, as of 21 secondary schools in the area, 16 (76%) are boys schools compared to 5 girls schools (24%).

Table 4. 9
Distribution of Educational Institutions in the Gilgit Agency

	Primary	Middle	Secondary	Total
D. J. Schools				
Boys	---	---	---	---
Girls	76	43	3	122
Govt. Schools				
Boys	41	2	16	79
Girls	13	22	2	17
Total	130	67	21	218

Adapted from: Aga Khan Education Service, Division of Statistics, 1989.

In addition to the above indicated gender disparity, there is a regional disparity which is also evident in the system of secondary education. For instance, from 5 secondary schools for girls, 3 are located in Hunza, 1 in Gilgit town and 1 in Punyal, whereas no secondary education is available in two remote sectors--Yasin and Gupis. Moreover, out of five schools two are model elite schools, accessible only to girls from rich families, as fees in these schools are higher compared to other urban schools of Pakistan. In all there are 306 villages and 218 schools, which means that on an average availability of formal school per village is less than one school. Thus, girls in the Gilgit Agency except in Gilgit town and some villages in Hunza and Punyal, have some access to primary and middle education but no access at all to secondary education. Unlike boys of this area, girls have limited access to travel to other centers in the country to acquire education, hence access to education for girls, especially at the secondary level is a serious problem in the Northern Areas.

In terms of accessibility it has been reported that in developing countries women's opportunity to enter in formal education depends on the social, moral and economic outcomes of education. For example, social

customs, peer and family pressure, moral values concerning girls' role as wives, economic cost and tangible benefits are all determining factors influencing parental decisions to educate their daughters. In the case of the Gilgit Agency, due to rural development projects and expansion of health and educational services, many employment opportunities have been opened up for educated women at the village level. Therefore, such perceived tangible economic benefits have resulted in more and more demands from parents for female educational institutions.

In terms of social customs and norms, unlike other Muslim societies, Muslims in the Gilgit Agency are more accommodating of their female folks. For example, women in villages of the Gilgit Agency are not secluded behind the veil, and they freely interact and work in the fields with men. This liberal attitude has contributed to women's accessibility to educational institutions.

However, demands for more female schools and female teachers at the secondary level are increasingly voiced by the parents. But where these demands are not met, it has not restricted girls' access to schooling where the majority of teachers are males. Further, in many villages where boys' schools are not available, the D. J. schools enroll both girls and boys at the primary and middle levels of education despite their policy of catering only to girls. Thus, Kelly's (1984:86). observation that, "access to education is limited not because of girls' background, but (because) the places are not available to them. Once schools were available, girls flocked to them, religious beliefs and lack of traditions of female education notwithstanding" is absolutely applicable to female education in the Gilgit Agency.

Quality of Education, Physical Facilities

School facilities and their environment in the Gilgit Agency are grossly inadequate for the number of children being educated. The number of class rooms available is always less than the number of classes to be housed in each school. Except for two model schools and some self-help schools designed and based on model schools, many of the D. J. schools are either held in the mosque (Jamatkhana) or in the villages' religious or social facilities. In these places children meet outside in the veranda or in one-two rooms set aside for such activities.

In some villages both D. J. and Govt. schools have approved school buildings, which provide two to five rooms, but the condition of these

buildings is far from satisfactory, as in most of these schools ventilation, lighting and sanitation facilities are very poor. No school in the Gilgit Agency is provided with a heating system and the during winter months (December to mid February) all schools including model schools remain closed. In addition to rooms and other facilities, supplies such as equipment, libraries, and storage facilities are not available in all schools. In some primary and middle schools even seating facilities are also inadequate. Therefore, the quality of physical facilities leaves much to be desired and is one of the major constraints affecting the quality of education. During the last few years AKES has made special efforts in building new schools or improving existing schools with adequate facilities and room for future expansion.

Quality of Education, the Teachers

Besides physical facilities, the quality of teachers also presents serious problems. The total teaching force in the Northern Area is reported to be 2,381 teachers in government schools and 576 teachers in D. J. schools. Of these, 32% in the Govt schools and 48% in the D. J. schools are trained teachers, and the rest have secondary school certificate but no teacher training.

The shortage of a professionally trained teaching force is generally attributed to inadequate training facilities that are available in the area. For example, the first Teachers' Training Institute was established in 1974 in Gilgit, and prior to its establishment teachers from Northern Areas were sent for training to colleges in other parts of the country. Initially this institute was offering Primary Teachers' Certificate (PTC) courses only to male teachers. It was in 1979, that PTC courses for females were started in a separate section of Girls' college. Since its inception and till 1987, the Government College of Education has trained about 605 males and 275 females in PTC.

Lack of training among teachers as a main factor responsible for poor quality of education in the D. J. schools was identified by the CEB in the early 1980s. To improve provision of teaching force in future, the CEB had made arrangements with Government Training College in Gilgit to train 15 teachers for D. J. Schools annually. This was a lengthy process to train existing teachers, hence in 1982 the idea of a program to enhance the

effectiveness of locally trained teachers was launched with the close co-operation of the Aga Khan Foundation and the state Government. As a result two major training programs--Field-Based Training program for master trainers and Refresher Training Course for teachers--were started in 1984. The outcome of both these training programs are presented in Table 4. 10

Table 4.10
Results of Teacher Training Programs
(Field-Based and Refresher Training Courses)

Year	Field Based Training		Refresher Courses		
	No. of Trainees	No. of Trainees Graduated	No. of Govt. Teachers	No. of AKES Teachers	Total No. of Teachers
1983	--	--	73	140	213
1984	--	--	157	88	245
1985	40	37	117	108	225
1986	40	35	54	47	101
1987	40	23	36	67	103
Total	120	95	437	350	887

Adapted from: Shah, D. Elementary Teachers' Training Programmes in Northern Areas. Unpublished Paper. Allamah Iqbal Open University. Islamabad. 1988.

Over a period of five years about 95 master trainers and 887 teachers were trained. Despite these efforts, nearly 52% in D. J. schools and about 68% in Govt. schools need to go through some sort of training program to teach effectively. According to the evaluation report of the Field-Based Training Project carried out by the National Institute of Psychology, Islamabad, PTC teachers trained under this program are exhibiting an improved classroom performance as compared to those PTC teachers trained in a traditional training institute (Shah, 1988: 10). It may be then concluded that, the continued efforts on the part of Government Training College and AKES to improve the quality of existing teachers and employment of trained teachers will eventually improve the quality of education in the Gilgit Agency.

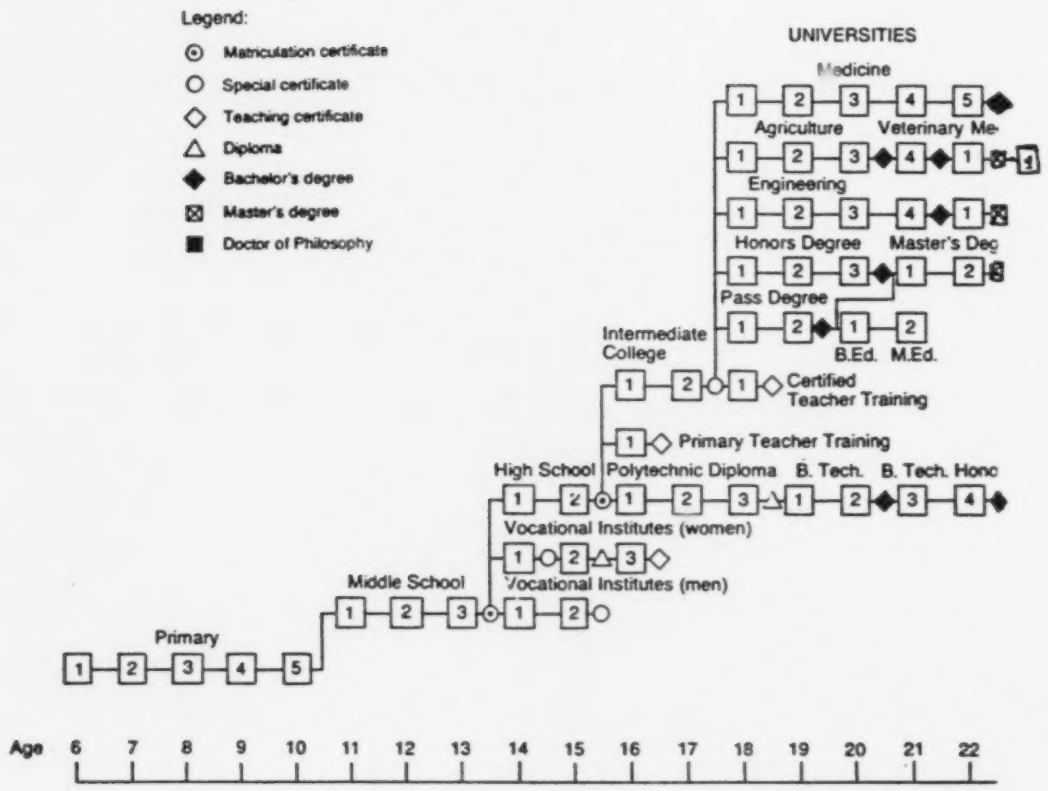
Relevance of Education and Curriculum Options

Equality of education for women suffers not only in terms of access to schooling, but also from the educational process itself in the form of restrictive options presented in gender stereotyped curricula. The nature of courses offered to students plays a vital role in popularizing education. People can be motivated to be educated if the courses offered have relevance to the needs of students, particularly for female students. Although girls are not denied access to school, they are expected to help in the general household affairs and in the fields. This results in continued dropouts of girls from schooling and a higher illiteracy rate among female population.

The structure of the education system is presented in the Figure 4. 3 which shows that primary level education in Pakistan is divided into primary and middle schools. Primary schools cover the first five years of formal education, starting at the age of five (Grade I) and continuing to about age 10 (Grade V). Primary education is free but not compulsory and in all but a few English-Medium schools the medium is either Urdu or a provincial languages. The middle schools cover the further three years of education up to grade eight. High school takes two years, which is a point of entry into the academic and professional fields of study. At this point a student can enter into technical education, teacher training or intermediate college which leads to university degrees, such as, certified teacher training and B. Ed. or M. Ed. in education; Honors degree in the Arts, Science or Commerce, and professional degrees in Engineering, Agriculture and Medicine.

In 1978, under General Zia's Educational Policy, major changes were introduced in the school curriculum. Education has become increasingly Islamic in content and orientation but experienced few structural changes. In general, the theme of the new revised curricula reflects the religious, national ideals and social objectives. The greater part of teaching time is being given to Islamiyat (nine hours, or 15%), Urdu (fifteen hours, or 30%), and Pakistan social studies (seven hours, or 10%) from grade 1-10. A detailed scheme of studies in classes 1 - 8 is presented in Table 4. 12.

Figure 4. 3
Structure of the Education System in Pakistan



Adapted from: Kurian, G. T. World Education Encyclopedia. Vol. II, New York and Oxford: Facts on File Publications, 1988: 968.

It is evident from the scheme of studies, that of eight subjects for language up to class 2, 31.3% of total teaching time is allocated, decreasing to 15.4% in class 3 and 4. Islamiyat and math covers approximately 15.4% of the total teaching time in classes 1-5, while science and Pakistani studies covers the next greatest allocation of the total time. Arts subjects comprise 12.5% of total teaching time in class 1, decreasing to 7.7% in class 5 in order to allow more time for the teaching of practical skills Health and Physical education cover 9.2% of total teaching time.

At the middle school level, curricula cover all the subjects taught in primary classes along with two more subjects: English (compulsory), and agrotechnical courses. There is also a choice of subjects including arts, Arabic and Persian. Maximum amount of teaching time at this level is allocated to agrotechnical subjects which comprise 20%. During this time girls study home economics. Urdu and English languages have been given equal time (13.3%), while Islamiyat and Math have 8.8%. Pakistan studies, elementary science, physical science, and arts/Arabic/Persian each has 6.6%.

The scheme of studies at the high school level is divided into three major components. The first component comprises four compulsory subjects--Urdu, English, Pakistan studies and Islamiyat. The second component comprises major sciences group such as math, physics, chemistry, biology and general subjects. The general subjects in this component are further subdivided into general math, household accounts and elements of home economics; general science and two subjects chosen from a list of 36 options including literature, history economics, geography and environmental science.

The third major component comprises vocational subjects, with the student choosing one from among two lists of suggested subjects which may be introduced into the schools according to the requirements and resources of the area. The allocations of subjects in each of the three components varies, with a range of 6.7% to 8.9% for each subject in the first and second components, and a total of 20% for third component subjects.

Table 4. 12

Scheme of Studies: Primary and Middle Grades

Levels	Primary Schools						Middle Schools	
Subjects of Study	Total Time Gr. I-II Hrs.	%	Total Time Gr. III Hrs.	%	Total Time Gr. IV-V Hrs.	%	Total Time Hrs.	Total Time %
Languages								
1st Language	8.0	31.3	4.0	15.4	4.0	15.4	4.0	13.33
2nd Language	---		4.0	15.4	4.0	15.4	2.4	8.88
English	N/A		N/A		N/A		4.0	13.33
Mathematics	4.0	15.6	4.0	15.4	4.0	15.4	2.2	8.88
Science	3.2	12.5	4.0	15.4	3.2	12.3		
Elementary -								6.66
Science	N/A		2.0	7.7	2.4	9.2	2.0	6.66
Pakistani/ Social								
Studies	3.2	12.5	2.0	7.7	2.4	9.2	2.0	6.66
Health and								
Physical Educ.	4.0	15.6	4.0	15.4	4.0	15.4	2.4	8.88
Islamiyat'	3.2	12.5	2.0	7.6	2.0	7.7		
Arts	N/A		N/A		N/A		2.0	6.66
Arts/Arabic/								
Persian	N/A		N/A		N/A		6.0	20.00
Agrotechnical	N/A		N/A		N/A		N/A	N/A
Total	25.6	100	26.0	100	26.0	100	29.0 100	100.0

Adapted from: Kurian, G. T. World Education Encyclopedia. Vol. II, New York and Oxford: Facts on File Publications, 1988: 967.

Future of Women's Education

The chapter has been devoted to an examination of women's educational development at the national level in Pakistan and at the rural level in the Gilgit Agency. The review of the data has shown that the task of promoting literacy and participation in education for women remains a major task confronting Pakistan as well as the Northern Areas. In terms of literacy rate females in Hunza (9.3%) in the Gilgit Agency have outnumbered females (7.3%) at the national level. In terms of participation rates at the primary level girls enrollment in the Gilgit Agency (60%) exceeds that of girls enrollment (45.7%) at the national level. However, in terms of participation at the secondary level females in the Gilgit Agency are underrepresented.

From the discussion presented in the section three--problems of female education in rural settings--it is obvious that, on the one hand the quantity of education in terms of number of schools at various levels of education, particularly at the middle and secondary level is grossly inadequate in the Gilgit Agency. Further, quality of teaching force and physical facilities in the area are far from satisfactory. On the other hand, the curriculum options (discussed above) for girls in the rural areas are not related to their lives. For example, agrotechnical subject is provided for boys in the middle schools and girls study home economics. Although home economics is very important for women in this society, almost all women in this area work in agriculture. Therefore, agrotechnical subject is equally important for girls, since they work as unpaid family workers from very early childhood.

Secondly, the vocational subjects are only offered in secondary schools. As noted earlier, there are only five secondary schools available for girls, which limits the access to secondary education for the majority of girls in the area. Further, those having access to secondary schools select most feminine job oriented subjects such as teaching or nursing. Thus, in spite of a great need for agrotechniques and vocational skills in the rural society, the educational options given to girls are more of a academic nature than vocational.

Thirdly, except one teacher training college in Gilgit town, no other form of higher education is made available both for boys or girls in the area. Thus, due to non-availability of any other form of higher education in

science, commerce, and agriculture girls either gather around teacher training or continue higher education in arts by distance teaching provided by the Allamah Iqbal University, this restricts them entering into other paid jobs.

It is thus evident, from the above discussion, that girls and young women in this area are not afforded equal access to education and as previously noted, their contribution to socio-economic development of their societies is seriously hampered. This has resulted in continuing illiteracy and ignorance among the female population which has hindered the development of a clean, healthy and disease-free environment and the up bringing of properly educated and adequately nourished children, increased burden of population growth and limited participation in the paid labour force.

5. RESEARCH DESIGN AND METHODOLOGY

The terms research problem, variables and hypotheses are commonly used words in any social science research projects. They are basic elements which help the researcher to transform ideas into concrete research operations. In this chapter these basic elements of research--hypotheses, variables, research design, methods of data collection and data analysis--are defined within the context of the research project undertaken in the Gilgit Agency.

Research Sites

The research for this study was undertaken by visiting the Gilgit Agency located in northern Pakistan. Of 300 villages and six sub-divisions, ten villages in three sub-divisions--Gilgit, Punyal and Hunza--were identified for the field work and data collection. The criteria employed in the selection of these villages were: (i) availability of formal schooling--primary, middle or secondary level--for girls, (ii) availability of the primary health services in the form of hospitals, minor medical units, health centers, or public dispensaries, and (iii) introduction to the rural development program organized by the Aga Khan Rural Support Programme in the area.

The project area was divided into four regions--Gilgit, Punyal, Lower Hunza and Upper Hunza--for the collection of data. In accordance with the above selection criteriia, Gilgit town and two surrounding villages--Danyor and Oshikandas were selected from the Gilgit region; from the Punyal region three villages namely Sherquilla, Single and Geech were identified, and from lower and upper Hunza four villages--Aliabad, Baltit (Karimabad), Gulmit and Soust were selected respectively. (see the map of Northern areas for the location of these villages).

The ten villages surveyed can be divided into two groups with regard to their economic growth and development. Gilgit town and its surrounding villages have experienced better economic growth due to the central position of the Gilgit town. This region can be called a semi-urban center; it has better education and health facilities, and all activities pertaining to rural development projects initiated by the Aga Khan network, government and international agencies are governed from this semi-urban center.

Punyal and Hunza, rural sectors of the Gilgit Agency, have restrained economic growth compared to Gilgit town. However, both these regions benefit from the spillover effects of economic development taking place in the Northern Areas. Punyal shows evidence of these effects, due to its close vicinity to Gilgit town, and Hunza, due to the Karakoram highway running through both lower and upper Hunza to China.

The Purpose of the Study

This research was designed to examine the role of education--formal schooling--in the development of rural women of the Gilgit Agency. As previously indicated some level of literacy and education is said to be positively associated with various aspects of women's lives, such as fertility and family size; participation in modern and traditional sectors of economies; and nutrition and child care practices. Nevertheless, one also needs to be aware of factors other than education such as institutional and social structures, as well as gender roles attributed to women's reproductive and family responsibilities, that play an important role in either enhancing or hindering women's contribution towards developing their rural societies.

The overall purpose of this research project was to investigate the extent to which exposure to education helps improve the quality of life of women and contributes to their increased participation in the socio-economic and cultural development of rural societies in Northern Pakistan. The study was designed to test some common assumptions regarding the impact of schooling on rural women's lives. The literature on women's education and development suggests that women's education is negatively related to fertility patterns and child mortality rates, and is positively associated with women's entry into the paid labour force.

Thus, it is argued that greater exposure of women to education will reduce the population growth, as well as improve a child's chances of survival to adulthood. The opportunity to acquire education will also improve women's chances to enter into the paid labour market outside their homes, which in turn will improve women's social and economic status in the family and in the society at large. Further, women's entry into the paid labour market will have a negative impact on fertility or on completed family size in the long term

Two major factors have been identified which hamper the development of rural areas in developing countries. These are higher population growth and lower economic growth which fails to sustain increasing population. Women play an important role in both the above areas, as lower economic growth is connected with low participation of the female population in the paid labour force, as well as marginal productivity from agriculture where a large number of women make up the labour force.

In view of the above factors three major goals were identified for this study. These goals were:

i) to assess what changes if any have taken place in the development of rural women in terms of fertility change or family size, child mortality rate and entry into the paid labour force resulting from their educational attainment, as well as what improvement has taken in the quality of their lives as measured by their participation in the socio-economic and cultural development in their villages.

ii) to identify the structural constraints which affect participation of women in the process of development and more directly in the improvement of their education.

iii) to provide useful research data for local authorities and agencies in developing more effective programmes in the field of education for girls and young women.

The Research Design

Hypotheses

Generally, hypotheses are considered to be the researcher's tentative answers to research questions. They are stated with varying levels of confidence depending on how much related knowledge is available about the question being proposed. A hypothesis is defined as "an explanation of the relationship between two or more variables expressed as a proposition." (Hopkins, 1980: 133). Hypotheses can be derived deductively from theories, directly from observations, intuitively or from a combination of these (Nachmias and Nachmias,1987: 65). Hypotheses presented here are derived from the literature review in previous chapters.

In light of the fact that women play a significant role in the development of rural societies, it is hypothesized that "greater exposure of women to formal education will result in an increased sharing of authority in relation to completed family size and lowering fertility, improved child care practices reflected in the survival rate of children, and improving women's participation in economic activities through labour force participation. From the above general hypothesis eleven specific hypotheses were derived:

1. The relationship between education and fertility is inverse in the Gilgit Agency.
2. The number of children desired declines with increase in educational attainment of the mother.
3. Education tends to have direct and positive impact on attitudes towards the use of family planning methods.
4. Education tends to act upon contraceptive use by facilitating access to contraceptive knowledge.
5. Women's educational attainment is inversely related to child mortality (i.e. more educated women even with small amount of education, have longer living children).
6. Educated women are likely to take better care of their own health during pregnancy.
7. Educated women tend to have better knowledge and understanding of child-care practices.
8. Educated mothers are more likely to visit health centers in order to give appropriate vaccination to their children and to have their growth checked regularly.
9. Education is positively related to women's entry into the paid labour market particularly, in the modern sector of the economy,
10. Women's differential earnings are strongly associated with the level of educational attainment.
11. Women's participation in the paid labour force is inversely related to fertility (i.e. women's employment is a powerful means of reducing fertility level).

Research Questions

The following research questions guided this empirical inquiry:

1. To what extent does an increase in education help in reducing the fertility among rural women between the ages of 15-44 years in the Gilgit Agency in Northern Pakistan.

In view of the fact that the literacy rate among women in the Northern Areas is less than 6 per cent and on an average a woman bears six to eight children, it has been hypothesized that an increase in education will reduce fertility rate among these women. This hypothesis is based on the assumption that women's education has more relation to fertility and population growth than men's education. The reliability and validity of findings used to test this research hypothesis depends on operationalization of the concepts, or the ability to measure education and fertility accurately. They also depend on being able to reduce the effect of intervening variables such as age and socio-economic status of women.

2.To what extent is mother's education associated with child mortality in the Gilgit Agency.

It has been observed in chapter five that the child mortality rate in 'Northern Areas' is higher than the national average - 150 to 200 deaths per every thousand births. This means that child mortality for the area is as high as 15-20 per cent of live births. The cause of such high mortality has been attributed to a continuing illiteracy and ignorance among the female population which is hindering the upbringing of adequately nourished children (Unesco, 1980:107).

The above question was derived from the notion that women's education in the Third World has a beneficial effect on child care. The hypothesis central to this notion is that women with formal schooling will show a greater tendency to adapt strategies to maximize the life chances of their children.

3. To what extent will women's access to formal education improve women's participation in the labour force, and their earning capacity?

This question is based on the assumption that a positive correlation exists between educational attainment and labour force participation. As noted previously, that assumption is associated with human capital theory which sees education as a process of investment from which both society and individuals achieve benefits. Education is considered the main route to more prestigious employment in the modern world. However, it is often observed that the gender gap in educational provision is mirrored in less participation and less reward in formal employment for women.

4. To what extent do gender differences in educational opportunity hinder women's socio-economic development in the Gilgit Agency?

Since education is related to various dimensions of women's development as well as their contribution to the socio-economic development of their society, it was necessary for this research project to examine the question of women's equal access to education at the national level as well as in the rural areas of the Gilgit Agency. Access to education in terms of adult literacy, participation rates at the primary and secondary levels, is examined in order to assess women's opportunity to acquire education.

Variables

All research problems are conveyed with a set of concepts which are abstractions representing empirical phenomenon. These concepts are converted by mapping them into a set of values. It is through these variables that concepts appear as hypotheses to be tested. The variables that the researcher wishes to explain are viewed as the dependent variables and the variables expected to explain the change in dependent variables are referred to as the independent variables. The general and specific hypotheses mentioned above indicate relationships between two variables, education as the independent variable and women's aspect of development --demographic, social and economic --as dependent variables.

Dependent and Intervening Variables

The dependent variables selected in this research were fertility level, child mortality and labour force participation (LFP). The relationship between education and the dependent variables are presented above in a set of eleven specific hypotheses. These hypotheses indicate that increases in the level of education will result in a decrease in fertility and child mortality and improvement in female labour force participation.

Of the several measures of individual fertility that can be calculated from the data collected through the questionnaires, four variables were chosen; the number of children ever born or total fertility level, actual family size, desired family size and ideal family size. The first variable, although intimately connected with marital fertility, is perhaps the most commonly used fertility indicator. The second provides a check on the first, as family size reflects both the number of children born and child mortality. The third and fourth reflect beliefs and attitudes held by respondents about the desireable number of children, addressing one possible intervening variable in a woman's life-time fertility. Measures of family planning (attitudes, knowledge, and use) were also taken to determine the effect of education on this intervening variable.

In the case of child mortality, the measure used was the number of children ever born to a woman who were born alive but died between birth and five years of age. Intervening variables measured included attitudes towards child-care practises and immunization behavior.

Female labour force participation was determined by asking women their occupation and coding their responses as paid or unpaid labour. They were also asked their income, to provide a measure of earning capacity.

The Independent and Control Variable

The measurement of respondents' education does not rely on the structure of the education system adopted by the Pakistan Government, but local usage of educational categories in Gilgit Agency. Pre-secondary schooling in Gilgit is divided into three levels: primary for grades 1 to 4, middle for grades 5 to 7, and secondary for grades 8 to 10. Further schooling includes post-secondary (non-university) and university degrees. Respondents were asked what level of schooling they had completed and these were coded into standardized categories as close as possible to the categories identified by the

United Nations for the World Fertility Survey. According to WFS collapsing educational data into groups tends to reduce the response error (United Nations, 1983:16), hence the possibility of using single years of completed schooling has been ruled out.

Finally, age has been used as a control variable in many of the analyses. This is necessary both because age is closely related to years of schooling (due to the time-frame involved in the introduction of formal schooling, as described in Chapter five) and because the number of births a woman may have is partly a function of age, (See Appendix V for definitions of the variables usd in this study).

Model of Research Design

The design of any research project depends on its problem and the nature of the hypotheses to be tested. The hypothesis which examines the effect of an existing variable (such as education in this study) on a given situation requires a correlational design, often referred to as a cross-sectional study and associated with survey research. In survey research the impact of an existing independent variable is measured by asking questions or by making observations to obtain answers. In most cases, survey research yields data which are used to examine relationships between a property of the respondent and the respondent's dispositions.

Since this research project intended to examine the effects of education on various aspects of women's lives, the method of survey research was employed to determine the impact of the level of education on fertility, family size, knowledge and use of contraceptive methods, child mortality, child-care practice, income distribution, and labour force participation or employment for women. A survey was conducted in ten villages in the Gilgit Agency with women (15-44 years of age) about their background, past experience and attitudes, concerning the above issues. The researcher administered the questionnaire in order to determine the extent to which respondent's behavior, attitudes or values varied as a result of their acquisition of a particular level of education.

For example, a typical problem of the effect of education on fertility was examined by determining the level of education achieved by each individual woman and relating that to the number of children born to each woman

prior to the interview. The analysis of crosstabulated results was designed to assess the relationship between these two variables.

The correlational design indicates the relation between level of education and the percentage of women having various levels of fertility. However, from this it is difficult to conclude that the number of children born are related to education only. There may be a number of other factors that could account for both the level of mother's education and the number of children. For instance, greater or lesser numbers of children and levels of education may be the result of the socio-economic status or age of women. The influence of these variables on the total sample is reduced by selecting only women between the ages of 15 - 44 years, and by accounting for them in the statistical analysis.

Data Collection and Methodology

Sample Size and Design

The target group for this study was comprised of married women between the ages of 15-44 years from ten villages of the project area. Reasons for the selection of this particular age group were, first, girls in this area generally get married when they reach puberty or just after. The most effective fertility span of the age is between 15-49 years. Second, although the domestic and family work for girls commence at an earlier age, it is at the age of 15 and above that girls enter into full-time family farming or full-time paid labour. Therefore, it was considered appropriate to measure the effects of education on employment and labour force participation from this age. Third, it was only in 1946 that the first school was established in Hunza, which means that only women who are now in their mid forties had an opportunity to acquire formal education.

The sample size for the study was initially intended to consist of 200 respondents from ten villages. From this population, it was planned to take a stratified sample from each villageof equal numbers with four levels of education (Females with no education and primary, middle, and secondary education). However, at the time of field research it was possible to select only 152 women, and these women were divided into five strata of educational levels. The fifth level of education--post-secondary and university education--was included at the time of field research as

respondents with such educational level were identified in each of ten villages.

In some villages fewer than the targeted number of women were interviewed. This deficiency of data was covered by interviewing more women in other villages from the same region.

A simple random sampling design was adopted in the selection of respondents. In absence of a proper household sampling frames, the family folders of the Aga Khan Health Services were employed for the selection. The family folder records each child's family history and background such as, names and ages of parents, number of children alive, their dates of birth and number of children died, etc. The main criteria in the selection of respondents was that each respondent should be married and of childbearing age (i.e.15 to 44 years of age).

Organization of the Field Work

The total time devoted to the field work was about ten weeks from mid October to December, 1989. The first two weeks were spent in Karachi, a major city on the coast of the Arabian sea, in order to complete initial background work for the research. This work included making contact with the organizations involved in the fields of education and the rural development programme in the Northern Areas (Aga Khan network), collecting background information and literature on the area from bookstores and libraries; making arrangements to travel from Karachi to Gilgit; and making contacts for accommodation and travelling within Gilgit Agency.

One week was spent in Gilgit center making further contacts with the Aga Khan network and collecting relevant information to identify the project area and the appropriate villages within the project area. Approximately seven weeks were spent conducting the interviews in ten villages. Each region was covered within a week and a half.

All interviews were conducted by the researcher personally in the Urdu language. Whenever language became a barrier, an interpreter (mainly a school teacher or a local health visitor or a social worker from the village) who accompanied the researcher helped in translation from the local language to Urdu or English. The interviews were conducted at the respondent's residence or in the Diamond Jubilee girl's schools or in the health centers. The interaction with the head of the family and other family

members gave an insight into socio-cultural factors affecting women's lives in the various areas. Informal conversation with young girls from various Diamond Jubilee schools and Government schools also provided valuable information affecting their education and aspirations.

Interaction with local people such as a tourist guide, hotel owners, social and family planning workers, leaders, and women's organizers also provided much needed information on the socio-cultural aspects and the role of women in the rural society.

Methods of Data Collection

Two main methods--survey research and documentation were employed in the collection of data. The survey instrument included a pre-designed structured interview questionnaire, to collect responses from 152 respondents. Data recording included field notes, questionnaires, and a log book. Personal and informal conversation with girls and women provided insight into social, cultural and religious norms or values governing women's attitudes and life options. In the above method of fieldwork two major languages were used--Urdu as a means of conversation, and English as the language of the instruments used in data collection.

Secondary data was collected from various sources. For example, the Aga Khan Education Service for Northern Areas (AKES) which is a major NGO involved in operating about 122 girls schools, provided all sorts of statistical and research documents on the female education in the area, as well as on the selected villages. Constant interaction and discussion with the executive officer, other senior personnels and teachers of AKES gave important and valuable information regarding girls' education in the area. Further, the Aga Khan Health Services (AKHS) and the Aga Khan Rural Support Programme provided information through various private and public documents collected by their networks. Some rare books on the area written by British army officers posted in the Gilgit Agency during the British rule in India were also used from the private collection of individuals.

Both primary and secondary sources were examined to gather descriptive data on the rural setting. The sources of data included census reports, survey reports and other official documents, from government and non-government organizations, giving overall profiles of the villages in the Gilgit Agency. The data and statistics related to educational opportunities,

income distribution and employment, occupational activities, composition of the population, family size, fertility level, infant mortality and labour force participation collected through the secondary sources were used for the purpose of comparison with empirical data collected through the primary sources.

Data Analysis

The analysis of any research findings depends on the source of data, methods of data collection as well as the nature of data. The source of data can either be primary or secondary. The analysis of primary data involves collating, coding, decoding, and computing the information gathered through the research instrument--in this case, the questionnaire. Analysis in this study is based on a simple model which relates dependent variables to education as an independent variable and the control variables such as age of respondents', ethnicity, family and economic background. These models are then subjected to analysis using cross-tabulation techniques.

Cross-tabulation analysis includes determining percentages and/or means of the dependent varable tabulating them according to respondents' levels of education. For example, in measuring the effect of education on fertility, the mean number of children born is cross tabulated with the mothers' educational level. Analysis of variance on the other hand, includes tests of statistical significance which makes it possible to gauge whether or not observed differences might have occured by chance alone.

Two measures from the above models are derived which were used in summarizing the association between dependent and independent variables. One is a set of adjusted means for each education category, where adjusted mean signifies the effects of other independent variables that are held constant. The second measure is the percentage of women reporting either low, medium or high level of fertility, or family size, or child mortality for each educational category.

A set of basic models selected and employed in this research project was adopted from the models used by the World Fertility Survey data available in the United Nations document entitled "*Relationship Between Fertility and Education: A Comparative Analysis of World Fertility Survey Data for Twenty-Two Developing Countries*" (United Nations, 1983).

Research Instruments

The data were collected by using a questionnaire through which the information on variables identified for this research project was gathered. A questionnaire is a research instrument through which the researcher determines the extent to which respondents hold a particular attitude or perspective. It provides a methodological approach for collecting information. The questionnaire is commonly employed to measure demographic and attitudinal variables. Demographic variables refer to subjects' backgrounds such as, age, sex, income, education and residence and attitudinal variables refer to values, beliefs, preferences and opinions.

The questionnaire in this research was designed in order to assess the extent to which formal education is related to the variations in fertility rates, infant mortality and female labour force participation. The questionnaire was formulated by using a United Nations' fertility survey document entitled--*Variables and Questionnaire for Comparative Fertility Survey* (United Nations, 1970). This document was used as secondary source and reference material in order to avoid pitfalls in the field work.

In this research project a combination of questionnaire and interview method was employed to obtain the information from respondents. The combined method of questionnaire and interview was used due to two reasons. First, the fact that, most people in Northern Pakistan use either Urdu or/and Brushaski, Sinah or Wakhi, which are national and regional languages as a means of communication. Hence, the questionnaire needed to be translated in these languages, which was not a viable option. Second, the level of English language used even by educated women was too low to comprehend and answer the questions. Thus, a combination of two methods enabled the researcher, with the help of a local teacher or health visitor, to pose the questions to the respondents in Urdu or local languages and record the answers in English on the questionnaire.

The questionnaire contained both closed and open ended questions. In closed questions choices were given to the respondent in answering and in open-ended questions the respondent was permitted to phrase her own answers. In general, the questionnaire was made of about 85 percent closed and about 15 percent open-ended questions. The open-ended questions were used to explore in-depth the attitudes towards and perceptions of family planning, family size, and child care practices.

The questionnaire was divided into two major parts--core and supplementary. The core questionnaire included questions related to fertility, knowledge, attitude and use of contraceptive methods, child and infant mortality, employment or work activities and income distribution among the respondents.

The supplementary section collected data for respondents' household background, and is referred as the household section of the questionnaire or the 'household quetionnaire'. The principles and procedures described in the following section were used in administering the questionnaire.

The Household Questionnaire

A list of household questions was addressed to the head of each household which sought information about the following general characteristics of each member of the respondents' household.

1. General or basic information: age, sex, marital status, relationship of the each member to the head of the household and position in the family. This information is recorded in the household record form I.
2. Educational background of each member of the household.
3. Social background: structure of the family, religious and cultural characteristics.
4. Economic background of the household: residency urban/rural, income, source of income, number of people in the labour force.

The Core Questionnaire

The core questionnaire was designed to examine the impact of education on women's contribution in the process of development. The questionnaire is addressed to targeted women between the ages of 15-44 years in each village. This questionnaire collected the following information:

1.General or basic information: name, age, marital status.

2.Educational background--pertaining to respondent's educational history.

3.Marriage and fertility:

i)The timing and character of basic demographic life cycle events

a. Marriage history;

b. Number of live births;

c. A birth history of each child: birth order, sex, born alive, date of birth, spacing of each birth;

4.Infant/child mortality and child care:

i)History of child mortality;

a. Number of children died;

b. Their ages;

c. Causes of death if known.

d. Pregnancy history: current pregnancy status, number of still births, number of abortions.

ii)Medical care and practice followed by mother:

a. Number of visits to medical center;

b. Knowledge of vaccination;

c. Knowledge of preventive and curative medical care and nutrition;

d. Medical care during and after pregnancy;

e. Attitudes towards medical care, general hygiene and cleanliness.

5.Family planning:

i) Attitudes towards family size and child spacing.

ii) Attitudes towards family planning and knowledge about the use of contraceptives.

iii) Past history of family planning.

iv) Aspirations and importance of quality and quantity of children

v) Observance of traditional norms after the birth:

a. Breast-feeding - duration

b. Taboos about marital practices

c. Food and other practices

6.Social background

i)Household composition and the structure of the family (from household report form).

ii)Religion of the respondent.

iii) Other cultural characteristics: ethnic group, language.

7.Economic background

i)Residency: urban-rural-remote.

ii)Current and past work experience.

iii) Occupation and employment status (division of labour between husbands and wife).

iv) Distribution of income.

Limitations

A survey research project like this needs a considerable amount of time and resources to obtain insights into the problems under investigation. For example, at the commencement of the research project it was essential first to spend some time with major organizations, such as Aga Khan Education Services for Pakistan in Karachi, to collect relevant information on education development in the area, as this is the private organization which started the first formal schools, as well as health and rural development network in the area.

Secondly, it was necessary to spend some time in Gilgit center with AKRSP, which has had a major project on rural development in the area since 1982. The AKRSP has a databank in which valuable information on most of the villages in Northern Area is stored. This data bank served as an important secondary data source.

Thirdly, at the beginning it was essential to become familiar with the community in Gilgit to establish a network of contacts, to build good working relationship with the villagers, and to identify prospective respondents. All these activities limited the actual time and resources available to collect the primary data, as permision to stay in Pakistan was granted for only two months. Hence the research project covered only ten villages in three sub-division in the Gilgit Agency.

A second limitation is that this project covered only Ismailis, a sub-sect of the religion of Islam, which means that the study is limited to one ethnic group. Thus, various different religious and ethnic norms affecting women's access to education and its impact on women's development in two major groups--Sunnis and Shia Ithna'ashris (Shias)--residing in other divisions, including Gilgit and Punyal devisions of the Gilgit Agency, particularly the division of Nagar, were not explored. The major reason for this limitation was limited time, financial resources and no access to communities other than Ismailis.

Ethical Considerations

The ethical guidelines established by the University of Alberta's General Faculties Council and the Department of Educational Foundations have been observed and complied with in this study.

Since the study deals with interviewing and gathering information both from individual women and key personnel of government and non-government agencies, all the potential risks of interaction, violation of privacy and the rights of the participants were respected. Therefore, data collected in this study are treated with utmost confidentiality and all participants were assured of this fact in advance. All respondents were requested to sign a consent form, and in case of those women without schooling a thumb impression was taken on the form.

In the following chapter, data results are presented and analyzed.

6. FINDINGS AND ANALYSIS

This chapter is devoted to the analyses, interpretation and discussion of the data collected for the study. The data collected during the field research are compiled and analyzed using the SPSS X statistics package on a mainframe computer. The method employed in the analysis is cross-tabulation of dependent variables--fertility, child mortality, and female labour force participation--against one independent variable--the level of education.

The chapter is divided into four sections--general features of the sample, fertility, child mortality, and female labour force participation. In these four sections eleven hypotheses are presented with the results in tables and charts, followed by a discussion. Each hypothesis presents a relationship of women's education to various aspects of fertility change, family size, family planning, child mortality, child-care practice, and labour force participation in terms of occupation and earnings.

Section one presents general features, specifically socio-economic characteristics of the respondents and the members of their households. This is followed by section two on the education-fertility relationship which deals with the impact of education on total fertility, family planning, and family size. Section three reviews the relationship between mothers' educational level and child mortality. The section also examines the impact of education on child-care practice and self-care during pregnancy. Finally, the relationship between women's education and labour force participation is examined in the last section which deals with women's entry into paid employment and earning capacity.

General Features of the Sample

A brief review of the social, economic and educational characteristics of the sample population may be useful in the analysis and interpretation of the data and in understanding the results presented in the rest of the sections in this chapter. This section is further divided into two sub-sections; 1) socio-economic characteristic of the respondents, and 2) socio-economic characteristics of the members of the households i.e. the family of the respondents.

Socio-Economic Characteristics of the Respondent

This section deals with some selected characteristics of the sample, which present a general profile of the women interviewed in this study. The group selected for this study consisted of 152 married women from ten villages, covering three sub-divisions of the Gilgit Agency and ranging from 15 to 44 years of age.

Table 6.1 presents data, drawn from the survey questionnaire, on four socio-economic characteristics of these women. Close examination of their distribution into six five-year age groups (15-19, 20-24, etc.) reveals that the highest concentration of women is between the ages of 20 to 24 (34%), and lowest concentration is 40 to 44 years (7%). The other four age groups ranges from 10 to 25%. Thus, respondents are unevenly distributed in the various age groups.

The examination of the literacy and level of education among the sample shows that 31% of the women are without education whereas 69% have some sort of education ranging from primary school to university education. This 69% which makes up the educated group consists of 23% with primary education (1-7 years),[1] 22.4 % with secondary education (8-10 years), and 23.6% with post secondary and university education. Thus, the percentages of respondents in the educated group is evenly distributed among the three levels. The ratio between those without schooling and those with schooling indicates that one out of three women in this sample had no formal schooing.

In the case of occupation and income the highest concentration of respondents is found in the unpaid family workers and those with less than Rs.1000 (70.4%). About one third of respondents are employed in the paid service sector with income ranging from Rs1001 to 1500 and above.

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[1] In later tables respondents with primary education are generally divided into those with the first primary grades (1-4) and those with later grades (middle school, grades 5-7 years).

Table 6. 1
Selected Social and Economic Characteristics of Respondents

Characteristics	Percentage Distribution of the Respondents	Characteristics	Percentage Distribution of the Respondents
Age Group		**Occupation**	
15 - 19	10.0	Not working	9.2
20 - 24	34.0	Unpaid family	
25 - 29	25.0	worker	52.7
30 - 34	13.0	Own account	8.5
35 - 39	11.0	Professionals	29.6
40 - 44	7.0		
Education Level		**Monthly Income**	
None	30.9	Less than Rs. 1000	70.4
Primary/Middle school	23.0	Rs. 1001-1500	24.4
Secondary	22.4	Rs. 1501 and above	5.2
Post-secondary and University	23.7		

Socio-Economic Characteristics of other Members of the Household

This section deals with some selected characteristics of other members of the respondents' households. These characteristics may provide useful background information to understand the social context of the respondents, but the data has not been incorporated into the following analysis. The data for the members of household was collected through the 'household questionnaire', which consisted of several questions concerning family structure, educational level, economic status, and facilities available in the household. Table 6.2 represents data on seven socio-economic characteristics measured in this questionnaire.

Like other traditional societies in the South East Asia, in the Gilgit Agency the pattern of extended and/or joint families is still very much in practice. However, with modernization entering into the area and due to migration from rural to urban sectors, the number of single or nuclear families are increasing, particularly in Gilgit town. This is evident from the family structure data presented in the Table 6.2. For example, of 152

households, 54% have joint families which consist of the respondent's own family, as well as that of in-laws, 36% have single families--respondent's husband and children, and 10% are extended joint families, which normally have 25-30 members. In this system married brothers, their wives and children, parents, grand parents, uncles, aunts, and other relatives all live under the same roof and the family income and resources are shared equally among all members.

The head of the family in most joint and extended family is the father-in-law or the grandfather-in-law or the husband (if he is the eldest son in the family) of the respondent. The single family is headed by the husband and only in case of the absence of the elder son or the older male members does the older women head the family. This pattern is visible from the data, which shows that 59% of the families are headed by father-in-laws or other male relatives, 39% by husbands and only 2% by the wives.

Deriving an appropriate balance of educational opportunities is a classic educational dilemma, particularly in the rural sectors of the developing nations. In most developing countries, the urban population has a better access to education than their counterparts in the rural areas. For example, the official literacy rate of Pakistan is 23.5%, whereas the literacy rate of the Northern Area is 14.8% (Census Report, 1981). However, the level of education among the adult family members of the sample (152 households) shows 63% with some schooling. This would suggest a higher literacy level than in the Northern Areas in general, as well as considerably higher than national figures. [2]

Overall 72% of males and 52% of females in families of the respondents in this research project are educated. The official literacy rate for females according to 1981 Census for the Northern Areas is reported to be 5.5%, which is significantly lower than the female literacy level suggested by the educational levels in the above table.

A similar pattern of enrollment in the school age population is visible. For instance, all school age boys (5-15 years olds) and 97% of girls in this study are in schools. These not only exceed enrollment rates of Northern Areas

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[2]This may also suggest that the sample, although randomly selected from the Aga Khan files, is not actually a random sample of the Gilget agency population, or that the Gilget agency has very high levels of school. This does not pose a problem for the central question of the research, the relation between schooling and other variables.

(75% boys and 60% girls), but also markedly enrollment rates for Pakistan at the national level (48 % boys and 25 % girls) respectively.

Table 6. 2

Selected Social and Economic Characteristics of the Respondent's Family and Households

Characteristics	Percentage Distribution of the Population		Characteristics	Percentage Distribution of the Population	
Family Structure[1]	**No.**	**%**	**FacilitiesAvailable**[1]	**No.**	**%**
Single		36.0	Running water		35.5
Joint		54.0	Electricity		92.8
Extended		10.0	Indoor Toilet		51.3
Total		100.0	Heater		45.6
			Radio/Taperecorder		86.8
Head of the Family[1]			Other appliances		21.1
Husband		39.0			
Wife		2.0	**Occupation**[3]		
Father in Law & others		59.0	Agriculture	245	37.23
			Service	205	31.15
Literacy Rate[2]			Small business	38	14.72
Enrollment Girls	159	97.0	Big business	11	4.26
Boys	156	100.0	Not in labourforce	159	12.64
Adult Educational level			Total	658	100.00
No Education	253	37.0	**Family Income**[1]		
Educated	405	63.0	Less than Rs.1000		6.6
Female Education			RS.1000 - 3000		29.8
No Education	148	47.0	Rs. 3001 - 5000		33.1
Educated	167	53.0	Rs. 5001 - 7000		21.9
Male Education			Rs. 7001 and over		8.6
No Education	101	29.0			
Educated	242	71.0			

1. Based on 152 households 2. Total number of enrolled students = 315 3. Total number of adults= 658

Percentage distribution of people by occupation shows that nearly 37% are engaged in agriculture, 31% in service, 14% in small business, 4% in big business and 13% are inactive. The service sector in this rural area absorbs about one-third of the sample population, due to the development programs initiated in the field of education, health, and rural development by Government and non-government agencies. In addition, the area has a large military base which also helps account for the higher rate of population occupied in the service sector of the economy.

The income distribution among these households show 62.9% in a middle income group, 23% in a upper middle income, 8.6% in the higher income and 6% in the lower income groups. Although there is no data presented in the table, it was observed that the middle and upper middle income groups mostly derive their income from the service sector, whereas higher income group from big businesses. The poor income group is one which depends solely on income from small agriculture holdings and small businesses.

In terms of basic physical facilities, the majority of the households (93%) have electricity which is normally used only for lights, but in the urban centers also for heating. One-third of the households have running water and one-half have indoor toilets. Most families in the Northern Areas have their own house, built on a traditional pattern by using mud and stones, heated through a central oven-like cooking place. Although 45% of households use either an electric or oil heater, these electric heaters are not used regularly, because of the short supply of electricity.

These indicators of the social and economic characteristics of the households of respondents provides background information on the study population.

Education-Fertility Relationship

The literature concerning education-fertility relationship reviewed in chapter II indicates that education is generally considered to be inversely related to fertility in all advanced countries and in most developing countries. However, it is also evident from the literature that variations in this generally accepted relation exist in many developing countries. Thus, the first task set out in this section is to examine the validity of the general

hypothesis that, "exposure of women to education (formal schooling) tend to reduce overall fertility (women's education is inversely related to fertility) in the Gilgit Agency".

The overall relationship between education and fertility in this section is determined through comparison of female education--years of schooling--with the indicators of fertility, which show direct and indirect effects of education on fertility change among the sample of 152 married women. Four measures of fertility change will be analyzed in this section: (i) total fertility level or mean number of live births (ii) desired family size and (iii) ideal family size and iv) the knowledge and use of family Planning. Of these the total fertility level measures directly the effect of education and the later three indicate indirect effects of education through attitudes towards family size and the knowledge and use of family planning methods.

Total fertility or children ever born was calculated by determining the mean number of children born to every respondent prior to the survey. Desired and ideal family size were determined by asking respondents how many more children they desire, and what they consider to be an ideal family size. These measures have been introduced to investigate indirect effects of education on fertility change through influencing respondents' images of family size.

The impact of education on family planning is determined by introducing three dependent variables--attitudes towards family planning methods, knowledge of contraception, and use of contraception. Family planning is considered to be an important factor in education-fertility relationship, as education may indirectly influence the fertility pattern by controlling the fertility level through family planning.

In accordance with the above measures, four specific hypotheses have been identified in this analysis, which take into account the direct and indirect effects of education on fertility and at the same time indicate the nature of education-fertility relationship. The rest of this section is devoted to analyzing and discussing each of the four hypotheses presented below.

1. Exposure of women to education (formal schooling) tends to reduce the overall fertility level.
2. The number of additional children desired and the size of the ideal family declines with increasing educational attainment of the mother.

3. Education tends to have a positive impact on attitudes towards use of family planning methods.
4. Education tends to act upon use of contraception by facilitating access to contraceptive knowledge.

Education and Fertility Change

Hypothesis 1: Exposure of women to education (formal schooling) is associated with a reduction in overall fertility.

In this section the education-fertility relationship is investigated using a measure of cumulative fertility, the total fertility (TF) level or mean number of children ever born. First, an average fertility level for the sample group has been calculated as the number of children ever born divided by the number of respondents interviewed. Thus, on average the fertility of women in the sample is 3.55 births.

$$TF = \frac{\text{Number children ever born}}{\text{Number of respondents}} = \frac{540}{152} = 3.55$$

The first task set out in this section is to test for the presence of an overall relationship between education and fertility. Accordingly, the relation of female education--years of schooling from no education to tertiary level education--to total fertility is described in the following pages. These are presented in Table 6.3.

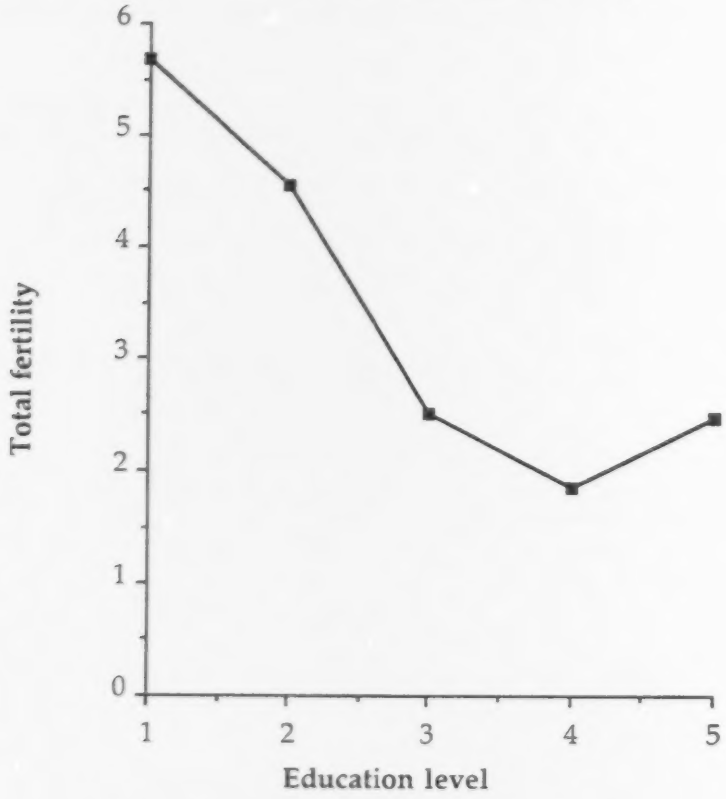
Table 6. 3
Education-Total Fertility Relationship

Level of Education	No. of Children Born	No. of Respondent	Total Fertility Rate
No education	267	47	5.68
Primary School (1-4 Years)	73	17	4.56
Middle School (5-7 Years)	48	19	2.52
High School (8-10 Years)	63	34	1.85
Post-Second. & University	89	36	2.47
Total	540	152	3.55

As can be seen from the Table 6. 3, the relationship between women's education and total fertility (mean number of children ever born) is inverse; that is fertility falls with increased schooling. The mean number of children born by women with various educational levels ranges from 5.68 births among women with no education to 2.47 births among those with tertiary education. While the difference in TF between these two groups of women is 3.21 births (5.68-2.47=3.21), the difference between women with no education and those with high school is higher (5.68-1.85=3.83).

Figure 6.1

Education and Total Fertility



1 = No education; 2 = Primary school; 3 = Middle school

4 = High school; 5 = Post secondary and university

However, the difference in TF between women with no education and those with primary schooling is 1.12 births and with those with middle school

is 3.16 births. This suggests that the most significant effect of education occurs after the level of schooling reaches 7 years.

This table suggests that the education-total fertility curve is not monotonically inverse, it shows a linearity up to high school level education and then fertility increases among women with post-secondary and university education, indicating somewhat a curvelinear relationship. In summary, these variations in the education-fertility relationship at various levels of education indicate that education is linked to fertility reduction; in general the higher the educational attainment of a woman the lower the number of children born to her, but among women with a post-secondary education a slight reversal of this trend occurs.

Table 6. 4
Percentage Distribution of Women in Low, Medium and High Fertility groups

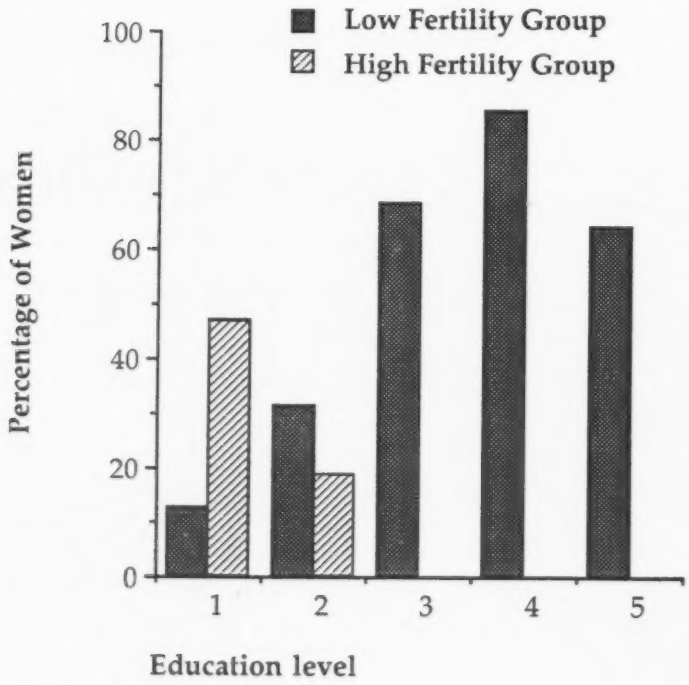
Level of Education	Fertility (Low)	Fertility (Medium)	Fertility (High)	Total Row
No Education No.	6	19	22	47
Row %	12.8	40.0	46.8	100
Primary Sch. No.	5	8	3	16
Row %	31.2	50.0	18.8	100
Middle Sch. No.	13	6	0	19
Row %	68.4	31.6	0	100
High Sch. No.	29	5	0	34
Row %	85.3	14.7	0	100
Post-Secondary & University No.	23	13	0	36
Row %	63.9	36.1	0	100
Total No.	76	51	25	152
Column %	50.0	33.5	16.4	100

(Missing Value = 0)

Another way to display the relationship between education and fertility is to compare women with different levels of education on the basis of low, medium or high fertility. Table 6.4 represents a cross tabulation of the percentages of women reporting total fertility as low (0-2), medium (3-5) and

high (6 and over), and educational attainment (i.e. no education, primary, middle, secondary and post secondary and university education).

Figure 6. 2
Percentage Distribution of Women in Low and High Fertility Levels by Educational Attainment



1 = No education; 2 = Primary school; 3 = Middle school
4 = High school; 5 = Post secondary and university

The column percentages in the Table 6.2 indicate that overall, 50%, 33.6% and 16.4% of women have reported low, medium and high fertility respectively. However, the proportion of respondents having low to high fertility in each category of education show that at the "no education" level the percentage of women having 0-2 children is lower (12.8%) than those reporting 6 and more children (46.8%). In contrast, the percentage of women reported as having 0-2 children is higher among middle school, high school, and post-secondary and university education (i.e. 68.3, 85.3, and 63.9

respectively). Although this table simply supports the previous findings (p.197-198), it shows that the inverse relation between education and fertility consists of a complete shift away from high fertility and a major move towards low fertility for all levels of schooling.

Education, Age and Fertility

Presentation of the findings of the bivariate relationship between education and fertility, reveals that education does not have a uniformly inverse relationship with fertility. In particular, women with post-secondary and university education seem to reverse the generally inverse relationship, by displaying a higher fertility than women with high-school education.

Incorporating age into the analysis may help to understand these differences. Multiple regression of education on age and the number of live births shows very strong relationships among all of these variables. Table 6.5 displays the correlation matrix.

Table 6. 5
Correlation Matrix: Education, Age, and Live Births

	Age	Education	Live Births
Age	1		
Education	-.529	1	
Live Births	.769	-.487	1

Thus, education is strongly inversely correlated with age (i.e. the younger the woman, the more likely she is to have additional years of schooling) and age is positively correlated with live births (the older a woman the more likely she is to have more births). To determine whether or not lower fertility rates are a function of schooling or merely of age, we can view age specific fertility rates cross-tabulated with various levels of schooling. First, we will display the age/fertility relationships, then the age-specific cross-tabulations.

In table 6.6 the age groups are divided into five year blocks, and fertility rates are determined for each group. In this table we can clearly see the effect of age on fertility. The mean number of children increases steadily with each

age group, from less than one child (.73) in the 15 to 19 year age group) to more than 6 children (6.72) in the 40 to 44 year-old age group.

Table 6. 6
Age-Specific Fertility Rates

Age Group (Years)	Number of Women	Number of Children	Mean Number of Children
15-19	15	11	0.73
20-24	52	100	1.92
25-29	39	122	3.12
30-34	19	77	4.05
35-39	16	82	5.12
40-44	11	74	6.72
All	152	466	3.06

It is apparent that it is difficult to conclude that education alone is responsible for the lower levels of fertility among educated women. This is because there are a high number of respondents within the educated group who have not completed their child-bearing, or even come near to completing it. Nevertheless, we will try to disentangle these relationships with table 6.7, showing age-specific fertility. In this case the youngest age group (15-19) has been dropped from the analysis, and the two older age groups are collapsed as the numbers were small in some educational categories.

The numbers are sufficiently small in many of these cells that one cannot draw firm conclusions, especially in the age groups over 30 years. However, in the 20-24 year age group and the 25-29 age group, there is evidence of a slight downward trend in fertility with increasing education. As in other data, this trend is not monotonic; in both age groups, the lowest fertility level is in the group of women with completed high school education, not the group with completed post-secondary or university education. But in neither case does the fertility level of women with post-secondary education approach that of women in the same age group with no education; in the 20 to 24 year age group the mean difference is equal to

one/half child less in the families with more educated women and in the 25 to 29 year age group it is equal to one child less in these families.

Table 6 .7
Fertility Rates by Age and Education

Education	20-24 yrs	25-29 yrs	30-34 yrs	35-44 yrs	n=
No Education	2.50	3.71	4.00	6.02	47
Primary	2.00	3.44	6.00	6.50	16
Middle School	2.11	3.60	3.50		19
High School	1.86	2.50	4.00	4.00	34
Post-Secondary and University	2.00	2.70	6.00		36
n=	52	38	20	27	152

Thus it can be noted that, as our first hypothesis predicted, education is inversely associatedwith fertility in Gilgat agency. It is difficult to tease out this relationship because of the extreme confounding of the age and education variables, associated with the introduction of schooling to Gilgat in relatively recent years and the rapid expansion of girls' schooling. In fact, the strongest statement we can make from these results is that controlling for age is critical in studies of fertility-schooling relationships in developing countries.

Education and the Desired Family Size

Hypothesis 2: The number of children desired declines with an increase in mother's educational attainment.

In light of the discussion presented in foregoing pages, it is evident that the age of respondents is an important intervening variable which has significant influence on fertility change, and it is difficult to disentangle the effect of this variable. Another way to investigate the extent to which education affects fertility is to measure women's attitudes on desired family size. In recent years, substantial effort has been devoted to the estimates of desired fertility in developing countries, using survey responses on

preferences for more or fewer children (Westoff, 1978; Pullum, 1980). The review of the literature regarding impact of education on family size indicates positive influence in changing attitudes, values and beliefs towards smaller family norms, and the hypothesis being tested here reflects that fact.

The analysis of data for respondents' reproductive preferences and views on an ideal family size outlined below provides an opportunity to assess the prospects for voluntary fertility change. The unifying theme for this section is the impact of education on fertility preference and its implications on fertility change. The section begins with an explanation of the term fertility preference followed by two indicators of fertility analysis--additional children desired and ideal family size--by level of mother's educational attainment.

The term "fertility preference" used here is adopted from the World Fertility Survey (WFS), as this term is considered appropriate for fertility data analysis in the case of developing countries. Terms such as, "reproductive decisions", or "reproductive intentions" are considered to be out of place for World Fertility Survey data as they presume situations in which the capacity to control fertility is highly developed, and in which fertility goals are well defined (Lightbourn, 1985: 165). Since this study has been undertaken in a rural areaof Pakistan, where women's capacity to control their fertility is not well developed, the term "fertility preference" is used.

Two questions regarding fertility preference were asked in the questionnaire: (i) In your case do you want to have any more children? and (ii) What do you think is the ideal number of children for a family to have? Two indicators are identified from the above two questions. One is the desired family size for each respondent (the number of children each respondent wanted in addition to already living children), and second, the normative ideal number of children considered as the completed family size. These two variables are cross-tabulated with the level of respondent's educational attainment.

Table 6. 8

Actual, Desired Additional and Desired Family Size by Level of Education

(Mean Number of Children)

Educational Attainment	Actual Family Size	Additional Children Desired	Desired Family Size
No Education	4.68	2.0	6.68
Primary School	3.76	1.30	4.06
Middle School	2.42	2.06	4.68
High School	1.73	2.92	4.65
Post-Secondary & University	2.29	2.36	4.66
All	3.06	2.25	5.31

The mean number of total children desired or potential future family size, derived from the mean of present living children and additional children desired, cross-tablulated against the level of education is presented in Table 6.8. It can be seen again from the table that the actual family size decreases with additional schooling, up to but not including post-secondary education. However, when the number of additional children desired is added to this figure which gives the desired family size column, there is very little difference related to education, except that women with no education want, on average, from 2 to 2.5 children more than do women with any level of schooling (primary to university). The only category within the schooled group which shows a desired family size lower than the others is women with primary school only. Clearly these data do not support the hypothesis.

The preference for desired additional children to some extent depends on the actual family size at any given point in time. Relationships between actual numbers and desired or completed numbers of children has two possible explanations, one called the implementation hypothesis and the other the rationalization hypothesis. According to the implementation hypothesis, women with high initial preference will proceed to have many children, and those with low initial preferences will successfully control their

fertility to have fewer children. In contrast, according to the rationalization hypothesis women gradually adjust their stated desired completed family size to take account of children who were actually born at the time (Pullam, Immerwahr and Cabigon, 1984: 150). In the latter case, the desired number of additional children might be seen more as a prediction a woman makes of her ability to control her fertility, than an actual expression of desire.

Nevertheless, if preference in this study is assumed to be fully implemented, fertility will be higher for women with no education than for those with any level of education. The projected potential family size for women with no education will be 6.6 children compared to 4.66 children for women who have completed post-secondary or university education.

Table 6. 9
Relationship between Education and Ideal Family Size
(Percentage Distribution of the Respondents)

Level of Education	Ideal Family Size		
	1-3 child	4-9 Child	Row Total
No. Education No.	6	39	45
Row %	13.3	86.7	100
Primary Sch. No.	5	11	16
Row. %	31.3	68.7	100
Middle School No.	7	12	19
Row. %	36.8	63.2	100
High School No.	11	23	34
Row. %	32.3	67.7	100
Post-Sec & No.	18	17	35
Univ. Row. %	51.4	48.6	100
All No.	47	102	149
Total %	46.7	53.3	100

(Missing Value = 3)

The second question asked of respondents as an indicator of fertility preferences or number of children desired, was about the respondent's ideal family size. The "ideal family size" is a general idea, not one which takes into

account the woman's actual family at the time. The results of this question are shown in table 6.9, with ideal family size dichotomized to 1-3 children in one category and 4-9 children in the other.

Analysis of the data presented in the Table 6.9 shows that percentages of women reporting 1-3 children as ideal family size increases from those with no education (13.3 %) to those with higher education (51.4%). There is a slight aberration in this general decrease as a higher percentage of middle-school graduates than high school graduates want the smaller family size, but the overall pattern is clear. Of course, a reverse trend is evident in women who considered 4 and more children as an ideal family size.

However, education has a stronger association on the image of the ideal family size then does the prediction of future family size based on the current situation and preferences for more children. If women's preferences are actually based on a rationalization model; that is they state their preferences for more children as being what they expect to have, it is possible to explain the discrepancy between these two values. That is, women's ideal family size may be the number they would really like to have if they could control fertility; preferences may be the number they actually expect given the difficulty in controlling fertility.

Education and Family Planning

The rapid increased in population growth in Third World countries has increased adoption of contraceptive methods to limit family size. The great accessibility of modern contraception through family planning programs introduced by the Government and non-government agencies, has democratized the practice of birth control in developing countries. This practice, once confined to a social elite in the developed world is now used by the majority of child bearing couples in the developed world and two-fifths of those in the Third World. In many developing countries, the service of family planning has been extended to most rural people through government programs which serve as an agent of change.

This section reviews the evidence of the impact of education on fertility change through family planning methods. The focus of analysis is on a set of three variables: attitudes towards family planning methods, knowledge of contraceptive methods, and use of contraceptive methods. The examination of the literature on education and fertility change discussed in

chapter II reveals that education tends to bring attitudinal changes and a willingness to depart from traditional behavior and to use modern contraceptive methods to limit family size. Therefore, these three variables are of special interest to the question of whether formal education contributes to contraception use. The section is divided into three sub-sections in line with above three variables; each section is headed with the appropriate hypothesis.

Hypothesis 3: that education tends to have a positive influence on attitudes towards family planning methods.

Table 6. 10 gives the percentage distribution of women who either approved or disapproved of modern methods of contraception as per their level of formal schooling. The majority of respondents (84.4%) approved modern methods of contraception to limit family size. Only 15.3% totally disapproved of the use of such methods. Closer examination of percentages in each educational level indicates that with an increase in educational level the percentage of respondents who approved the modern methods of contraception also increases. For example, proportionally, 80.4% of women without any formal schooling have shown approval compared to 88.6% of those with post-secondary and university education.

Conversely, of those who disapproved family planning methods a higher percentage (19.6%) are from the no education category rather than high school and university education (11.8% and 11.4% respectively) categories. In both cases, with the exception of respondents with middle school eduction who show a lower percentage than that of the no education level, rest of the three levels--Primary, high school and higher education--indicate a positive effect of education on attitudes toward modern contraception. However, the percentage of respondents without formal schooling who have indicated approval for modern contraception is also high.

Table 6. 10

Percentage Distribution of Respondents Approving and Disapproving Contraceptive Methods by Level of Education

Educational level	Approved	Disapproved	Row Total
No Education			
No.	37	9	46
Row %	80.4	19.6	100
Primary Sch.			
No.	14	2	16
Row %	87.5	12.5	100
Middle sch.			
No.	15	4	19
Row %	78.9	21.1	100
High Sch.			
No.	30	4	34
Row %	88.2	11.8	100
Post-Sec.. & University			
No.	31	4	35
Row %	88.6	11.4	100
All			
No.	127	23	150
Total %	84.7	15.3	100

(Missing Value = 2)

The reason for such a high percentage of women without formal schooling approving family planning methods, can be attributed to a "spill over" effect of improved primary health care services and overall economic development witnessed by the area in the last decade. That is, as the area began to experience the results of economic growth started by the AKRSP in 1981, the expansion of formal schooling for boys and girls, and primary health care, the pool of women with no education both shrank in numbers and gained more knowledge of contraceptive methods and importance of having a smaller family. Thus, it may be suggested that education is by no means the only variable influencing a change in attitudes for family planning methods.

But it may be that schooling indirectly affects attitudinal change towards contraception. Table 6. 11 presents reasons given by the respondents for the approval of modern methods of family planning. This table tabulates the results from an open-ended question in which six reasons for approving the use of family planning methods could be identified. (1) to provide better

education and health care to all children, (2) fewer pregnancies are good for mother's health, (3) good for the health of the new born, (4) to improve family's economic conditions, (5) so that mother can work outside home in the paid labour force (6) small family is good for the nation's economy. The percentage of women giving these reasons have been calculated as a percentage of the total number of women in each level of education. (For example, 36.6% of 41 women with no education say using contraception contributes to better education and health care of their children).

From the data presented in the table 6.11 two major factors for approving family planning methods stand out--health and economic. From the health perspective the reason 'to give better education and health care to all children' seems to be the most important factor for approving modern family planning methods, as highest percentages of respondents in all educated groups and over 1/3 of the women with no education have given this reason. However, health care and education are the first priority for educated women, whereas the reason 'good for mother's health is more important to women with no schooling.

With respect to economic factors, the reason 'improving economic conditions' is more important to women with middle (29.4%) and high school education (30.3%), and higher education (25%) compared to 6.2% and less for women with primary education or no schooling. In a similar vein, the reasons 'mother can work outside home' and 'good for nation's economy' were given only by those respondents who had high school and university education. It is perhaps interesting that only women with post-secondary and higher education responded to all six reasons compared to those with no education or some education.

Therefore, it is evident from the foregoing discussion that, educated women are more strongly oriented to economic reasons for approving family planning methods whereas, those with no education or some education are more inclined to health care and education of their children. However, general understanding in terms of children's health and education, as well as mother's health is indicated by the majority of respondents irrespective of their educational attainment. One reason for such an understanding can be attributed to the fact that in the last decade more and more women had access to primary health care services, which impart knowledge about the importance of giving better health care and education to children.

Table 6. 11

Percentage Distribution of Yes Responses to Various Reasons for Using Modern Contraceptive Methods

Level of Education	Better Education & health care	Good for Mother's health	Good for New Born Baby's Health	Improve economic conditions	Mother can work work outside home	Good for the Nation's Economy	Row Total Number
No Educ. No	15	20	0	1	0	0	41
%	36.6	48.8	0	2.4	0	0	
Primary No	11	7	1	1	0	0	16
%	68.7	43.7	6.2	6.2	0	0	
Middle No	11	2	2	5	0	0	17
%	64.7	11.7	11.7	29.4	0	0	
Second. No	24	8	3	10	5	4	33
%	72.2	24.4	10.0	30.3	15.1	12.1	
Post-Sec. & Unive. No	23	16	11	9	21	14	36
%	63.9	44.4	30.5	25.0	58.3	38.8	
Total	143	143	143	143	143	143	143

(Missing value = 9)

Similarly, more and more educated women have found better employment opportunities in the fields of education, health and rural development programs initiated by the Aga Khan network and other international agencies. For instance, 15.1% of women with secondary and 58.3% with university education gave the reason for use of contraception so that they can work in paid employment. This suggests that the opportunity cost for having more children is higher for these women than those with no education or some education, who are often working as unpaid family workers.

Most women with post-secondary, teacher training and university education work in paid employment with better wages and limited maternity leave. For these women family planning to limit or not limit the number of children is partly an economic choice. None of the respondents with no education, primary or middle school categories gave the reason 'so the

mother can work outside home'. This can be attributed to the fact that most of these women work on a family farm, which does not conflict with child rearing activity as in the case of paid employment. The role compatibility and opportunity cost of having more children is more evident in the case of educated women than among those without any formal schooling.

Hypothesis 4: Education tends to act upon use of contraception by facilitating access to contraceptive knowledge.

The variable of knowledge and use of contraception methods has a considerable effect on fertility change in developing countries. Education as an agent of change has been shown to have a significant impact on ideal family size and educated women tend to have positive attitudes towards family planning methods. Both the above variables have been discussed in the previous section. This section is devoted to reviewing the effect of education on the acquisition of knowledge and the use of contraception. Other studies show that educated women do not want more children and tend to use contraception to limit family size (Freeman and Coombs, 1974).

Table 6.12 presents the percentage distribution of respondents with no knowledge and some knowledge (of at least one method of contraception), as per their level of educational attainment. Overall 27% of respondents had no knowledge at all of family planning methods. The percentages of women having no knowledge in each level of education ranges between 43% among those with no education to 13.9% with post secondary and university education, that is decreasing with an increase in the level of education, indicating an inverse relationship between education and knowledge of family planning.

However, this relationship is not monotonically inverse with every increase in education attainment. Primary school graduates do not fit the overall pattern, displaying the lowest percentage (12.5%) of women with no knowledge of contraception

Table 6. 12

Percentage Distribution of Respondents without any Knowledge and Some Knowledge of Contraceptive Methods

Level of Education	None (1)	Some (2)	Row Total %
No Education No.	16	31	47
Row %	43.0	66.0	100
Primary Sch. No.	2	14	16
Row %	12.5	87.5	100
Middle Sch. No.	6	13	19
Row %	31.6	68.4	100
High Sch. No.	12	22	34
Row %	35.3	64.7	100
Post-Secondary & University No.	5	31	36
Row %	13.9	86.1	100
Total No.	41	111	152
%	27.0	73.0	100

(Missing Value = 0)

Column 2 of the above table shows the percentage of women having some knowledge--at least one method--of family planning. Overall 73% of respondents have some knowledge of family planning method. A close examination of percentages within each level reveals that the percentage of women with post-secondary and university education exceeds by nearly 20% that of women without formal schooling. As this column is just the inverse of column 1, we again see the primary school leavers as "out of pattern", with the highest percentage of all educational categories showing some knowledge of contraception. From this itmay conclude that, in general, there is a relationship between education and contraceptive knowledge, but there is a need to do further research to explain why primary school graduates display the results they do. It is possible they are the main users of the primary health care institutions, receiving their knowledge directly from there.

Table 6.13 presents the percentage distribution of women who know about contraception and who have ever used one or the other methods. Overall 28.2% of women reported to at least occasionally have made use of a family planning method, and the analysis as per their educational attainment shows an increase in percentage from 11.1% to 38.9% among women with no education to university education.

Table 6. 13

Percentage Distribution of Respondents Everused a Method of Family Planning

Level of Education		Everused	Never Used	Row Total
No Education	No.	5	40	45
	Row %	11.9	88.9	100
Primary Sch.	No.	3	11	14
	Row %	21.4	78.6	100
Middle Sch.	No.	8	11	19
	Row %	42.1	57.9	100
High Sch.	No.	12	22	34
	Row %	35.3	64.7	100
Post-Secondary & University	No.	14	22	36
	Row %	38.9	61.1	100
Total	No.	42	106	148
	%	28.2	71.7	100

(Missing Value = 4)

In this case, the percentages who have ever used contraception is higher among women with middle school than those with high school and university level. However, the overall pattern is to an increase with education, with major increases between no schooling, primary schooling, and middle-level schooling.

The percentage distribution of respondents currently using any method of contraception presented in Table 5.14 shows that of 149 respondents only 32 (21.4%) are currently using family planning method in order to limit family size. Further the percentage of women currently using contraceptives by their level of education ranges from 6.7% with no education to a high of 36.8% among those with middle school education. Beyond this level, the percentage of women using contraceptives decreases with high school (32.4%) and post-secondary and university graduates (20%) respectively, but remaining higher than those without formal schooling.

Thus, the relationship between education and contraception use is positive when comparing women with no education to those with primary to university education. However, the relationship is not linear but takes the shape of an inverted U-curve. These data on post-secondary and university graduates use of contraception support data in earlier tables, which show this

group of women desied more additional children than do women with less education. Two possible reasons for such a relationship can be identified. One is that educated women have better paying employment and can afford more children. The second, is that educated women delay marriage and hence refrain from using contraceptives until completed family size has been reached. It will be difficult to test these explanations in Gilgat until educated women are more widely distributed through the older age categories, and therefore more of them may be at a point where they consider their families complete.

Table 6. 14

Percentage Distribution of Respondents Currently Using a Method of Family Planning

Level of Education		Current Use	Not Using	Row Total
No Education	No.	3	42	45
	Row %	6.7	93.3	100
Primary Sch.	No.	4	12	16
	Row %	25.0	75.0	100
Middle Sch.	No.	7	13	19
	Row %	36.8	63.2	100
High Sch.	No.	11	23	34
	Row %	32.4	67.6	100
Post-Secondary & University	No.	7	28	35
	Row %	20.0	80.0	100
Total	No.	32	117	149
	%	21.4	78.6	100

(Missing Value = 3)

The second possibility above, that educated women delay marriage so have not yet completed their family size, is supported by the data in Table 6.15. This reports the percentage of women in each educational category who plan to use family planning methods sometime in the future. In this case over 97% of post-secondary and university graduates report they plan to use contraception in the future. Overall, there is an increase in percentages at each successive level of education from no education to university level (with a minor drop at the primary school level).

The comparison between current usage and future use of the contraception indicates a general increase in the percentages of women who will use contraception method in future (80.9%) over those who are currently using (21.4%) some methods. Further, the percentage of women currently using contraception varies from 6.7% among those with no schooling to 32.4% and 20% among those with high school and university education. However, more than 90% of respondents with high school and university education have indicated future use of contraception compared to 63% of those with no education. From this, it is evident that educated women are more oriented to use of contraception to control family size.

Table 6. 15

Percentage Distribution of Respondents Who Will Use Family Planning Methods Sometimes in the Future

Level of Education		Future use Yes	Future use No	Row Total
No Education	No.	30	17	47
	Row %	63.8	36.2	100
Primary Sch.	No.	10	6	16
	Row %	62.5	37.5	100
Middle Sch.	No.	17	2	19
	Row %	89.5	10.5	100
High Sch.	No.	31	3	34
	Row %	91.2	8.8	100
Post-Secondary & University	No.	35	1	36
	Row %	97.2	2.8	100
Total	No.	123	29	152
	%	80.9	19.1	100

(Missing Value = 0)

Therefore, it may be concluded that the data presented above validates the overall hypothesis that education is positively related to contraceptive knowledge and use. However, variations among educated groups in each of the above three cases--everused, current use and future use--have been noted.

The Diffusion Process of Modern Contraception

Contraceptive use is the result of a conscious decision to avoid conception, which may be taken by one or both parents. The steps leading to a

decision to adopt a method are described in a number of social psychological models (Bogue, 1967), which generally includes the stages of becoming aware, becoming informed, evaluating, making a trial and finally adopting the innovation.

Table 6. 16

Stages of Diffusion of Modern Contraceptive Adoption and Operational Measures

Stage	Activity Content	Operational Measurement	Sample
Attitudes	Assessment of attitudes towards use of contraceptive methods	Has approved or disapproved of the use of such method	Entire sample
Knowledge or information	Accumulation of basic information concerning various methods of family planning	Has ever heard of a modern contraceptive method(s)	Entire sample
Trial or everused	First use of the idea or practice	Has everused modern contraceptive method(s)	Entire sample
Adoption or current usage	Full scale use which becomes habitual and an integral part of behavior	Currently uses contraceptive method	* Exposed women
Possibility of using in future	Intention to use in future	Has an intention of using contraceptive method in future	Those who approved but not using currently

* Currently married fecund non-pregnant women including contraceptively sterilized women

Adapted from Cleland, J. and J. Hobcraft (eds.) Reproductive Change in Developing Countries Insight from the World Fertility Survey. Vol. 1. New York Oxford University Press. 1985.

To assess the diffusion of contraceptive methods for this research project the social psychological model referred to above has been adopted by

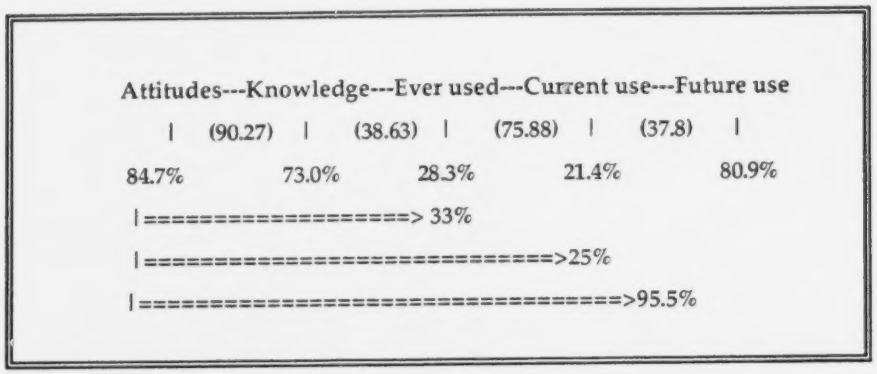
cross tabulating education by five stages leading to current and future use of contraceptive methods. These five stages are having positive attitudes, becoming informed, making trial by using sometimes, adopting current usage, and possibility of adoption at some point in the future. Table 6.16 describes stages of diffusion and the operational measures employed in this model.

An application of the above diffusion model to results of this research with five stages of attitudes, knowledge, everused, current use, and future use as per two extreme levels of education--no schooling to tertiary education--is presented in the table 6. 17. While this depiction does not take into account motivation, availability of contraceptive devices, or age of the respondents, it may provide an adequate framework within which the influence of education on the rise in modern contraceptive use can be assessed.

The picture that emerges from the findings is impressive as far as stages of attitudes and knowledge are concerned. Based on the findings 84.7% of respondents in the remote rural mountainous area under this study have shown approval or positive attitudes towards the use of contraceptive methods, and about 73% have become informed about modern methods of contraception.

The implementation of the attitudes (84.7%) and the knowledge (73%) in terms of trial or everuse is only 28.2%, and 21.4% have adopted the family planning practice as a current use. However, almost 81% of respondents have indicated the possibility of using contraception some time in future. From the perspective of a sequential process, the percentage (see Fig. 6.3) proceeding from attitudes to knowledge is 90.27%, from the knowledge to actual trial (everused) is 38.63%, and from trial to current adoption is 75.88%. The proportion from attitudes to current use shows that one third of those having positive attitudes have actually used at some time, and approximately one fourth have become persistent users. Certainly, these percentages reveal that, despite favorable attitudes and knowledge, the adoption of modern contraception method is not widely practised by the respondents in this study.

Figure 6. 3
Percentage Distribution of the Stages of Diffusion Model



Further, the examination of the data from Pakistan national figures (Tsui, 1985: 121) shows that, 75% of married women are aware of contraceptive knowledge, 60% have tried and only 4% have adopted the practice (see Table 6.17). Comparing these figures with the data in this study, it is evident that women in the this rural area of Northern Pakistan exceed in percentages in all the stages of modern contraception innovation.

The cross-tabular analysis of educational attainment from the perspective of sequential percentage shows a similar pattern of decrease up to adoption and increase in future use. For example, Table 6.17 presents percentages of each stage by the level of education, which indicates that in the no education category the percentage of respondents having favorable attitudes to adequate knowledge decreased from 80.4% to 66%, and from trial to adoption from11.9% to 6.7%. However, same pattern of increase in percentage from no education to higher education in each stage is not evident, except in case of adoption and future use where the percentage increase from no education to university graduates is from 6.7% to 20%, and 63.8% to 80.9% respectively. In case of the stage "attitude of approval" percentages from no education to the middle schooling decrease from 80.4% to 78.9%. Conversely, at the middle school, the upward trend in the percentages is evident in the trial and adoption stages. Figure 6.4 shows a graphic presentation of education and the modern contraceptive innovation among res[ondents

Table 6. 17
Education and Modern Contraceptive Innovation Among Respondents

Educational Attainment (level completed)	Attitude of approval (%)	Knowledge of at least one method (%)	Everused Trial (%)	Current use Adoption (%)	Future use (%)
No Education	80.4	66	11.9	6.7	63.8
Primary School	87.5	87.5	21.4	25	62.5
Middle School	78.9	68.4	42.1	36.8	69.5
High School	88.2	64.7	35.3	32.4	91.2
Post-Secondary & University	88.6	86.1	38.9	20	97.2
All	84.7	73.0	28.2	21.4	80.9
Pakistan	75.0	60.0	8.0	4.0	N/A

Moreover, the World Fertility Survey data also shows a similar pattern in the modern contraception innovation. For example, reporting on the findings in 28 LDCs representing 770 of the 2348 million inhabitants, or one third of the developing world's population outside China, Tsui has observed that, "based on unweighted averages, 80% of the ever-married women in these countries have become informed about modern contraception. Almost one-half have made a decision in favour of using contraception, of whom the majority will probably adopt a modern method. Another 35% have actually tried modern contraceptives, and of these currently exposed to the risk of pregnancy, an average of one-quarter are now using some modern method" (Tsui, 1985: 118).

In this study, the lower percentage of women reporting trial and adoption stages can be attributed to limited contraceptive and family planning programs in the area. It was observed during the field research that, although the NGO is operating an excellent primary health care service, they has no family planning portfolio in their health programs.

There are two main reasons for this. First, the government of Pakistan is operating family planning clinics in the area so the NGO has chosen not to duplicate this service. Second, like other Muslim societies around the world, the issue of birth control is not openly accepted in the area as it has not been clearly accepted by Islam. The issue is controversial and therefore requires careful handling, which restricts the NGO from having extensive family planning programs. The result may not be limiting attitudes towards or knowledge of contraception, but limited availability of contraceptive devices. This maybe the major factor in the lower percentages of the use of family planning methods.

From the preceding discussion and the analyses of the empirical data it is evident that, although the effect of education on the current usage of family planning method is positive, this positive relationship is not consistently reported in each stage of the innovation from attitudes to current use. However, the percentage increase in future usage, both sequentially from attitude to future use and from women with no education to tertiary graduates, is evident. Therefore, it may be suggested that, education together with appropriate family planning programs and easy availability of contraceptive devices is associated with usage of modern contraceptive methods to limit family size, which in turn will reduce the fertility level.

Education-Child mortality Relationships

Mortality as a component of population change plays an important role in determining population growth. A significant decline in infant and child mortality has been observed in all parts of the world, but it has occurred at different rates in different areas. For example, the mortality decline in Third World countries has occurred at a more rapid rate since World War II, compared to a gradual decline in developed countries which took place over 150 years (Agyie, 1988: 76). Several factors have contributed to declining

mortality in Third World nations, of which education and health services are considered to be the most important ones.

The review of the literature on education-child mortality presented in chapter two indicates that maternal education is the single most significant determinant of marked differences in child mortality (Caldwell, 1976: 408). Further, the review also suggests that educated mother is more likely to provide a healthy diet, seek appropriate medical help and follow medical advice in preventive and curative child care practices.

In view of the above fact, this section focuses on the relationship between maternal education and the child/infant mortality rate in Gilgit Agency. The hypothesis central to the analysis is that "greater exposure of women to education may result in improved child-care practices and better health and survival rates for children. Two dependent variables derived from this hypothesis are: (i) children's survival rate and (ii) the health of children.

The section is divided into three sub-sections. (i) Mothers' education and child survival and mortality rates, (ii) education and self-care during pregnancy, and (iii) education and knowledge of child care practice. Three sets of specific situations are analyzed in order to arrive at the above relationships.

Hypothesis 5: Women's educational attainment is inversely related to child mortality.

The survival rate can be measured by comparing number of live births to a woman and the number of children who survived. Table 5.18 presents survival rate of children by their mothers' level of education, which shows that with an increase in education the survival rate also increases. However, like fertility measures this increase is not consistent and the variations within educated group do exist. For example, the highest survival rate is at middle school level (96%) and beyond this level the rate decreases slightly (93% and 92%). Nevertheless, from the data it may be suggested that a child whose mother has some to higher education has better chances to survive than a child whose mother is not educated at all.

Table 6. 18

Mother's Education and Child Survival

Education Level	Live Births (Mean)	Survived (Mean)	Survival (Rate %)
No Education	5.68	4.68	82.4
Primary School	4.56	3.76	82.4
Middle School	2.52	2.42	96.0
High School	1.85	1.73	93.52
Post-Secondary & University	2.47	2.29	92.72
All	3.55	3.06	86.19

Table 6.19 presents the percentage distribution of respondents indicating 0-4 children died by the mother's level of education. It is evident from the table that, of 152 respondents 49 have reported loss of from 1 to 4 children between the period of marriage and the date of the interview. Of these 49 women, 31 (63.2%) are those who have had no formal schooling compared to 18 (36.8%) who had formal education ranging from primary to university levels. Further, the table also indicates that as level of education increases the percentage of women reporting death (1-4) of children decreases except in the case of percentage of women with university education reporting death of 2 children, which is higher (8.3%) than middle (5.3%) and high school education (2.9%).

Close examination of the table also indicates that only 8.4 % of respondents have lost 3 to 4 children and all have no education, while no women with even a small amount of education have reported loss of more than two children. On the other hand, the table also indicates that of 47 respondents 29 have reported death of one child, and of these 19 (40%) are in the no education category. This percentage decreases monotonically from women with no education to women with post-secondary and university education. As more deaths of children are reported, the numbers in the cells become too small to meaningfully compare percentages.

Table 6. 19

Percentage Distribution of Respondents Indicating Death of 0-4 Children

	Number of children died					
Level of Education	None	One	Two	Three	Four	Total Row
No Education No.	16	19	8	3	1	47
Row %	34.1	40.4	17.0	6.4	2.1	30.9
Primary Sch. No.	10	3	3	0	0	16
Row %	62.6	18.7	18.7	0	0	10.5
Middle Sch. No.	15	3	1	0	0	19
Row %	78.9	15.8	5.3	0	0	12.5
High Sch. No.	29	4	1	0	0	34
Row %	85.3	11.8	2.9	0	0	22.4
Post-Secondary & University No.	33	0	3	0	0	36
Row%	91.7	0	8.3	0	0	23.7
All No.	103	29	16	3	1	152
%	67.7	19.1	10.5	2.0	0.7	100

Missing value = 0

Child mortality can also be measured by the number of deaths per thousand births. The overall mortality rate for this study is calculated as 137 deaths per thousand births, or 13.7 % which is lower than the official mortality rates for the Gilgit Agency (150-160 deaths per thousand births). Table 5:20 shows the relationship between educational attainment of mothers and the deaths per thousand live births.

The analysis of child mortality in terms of education, from no schooling to university graduates, shows an inverse relationship. For example, child mortality according to mother's educational attainment presented in the table 6.20 indicates 179 deaths per thousand among women with no education compared to 67 per thousand births among those with tertiary education. This inverse trend is consistently observed with increases in the level of education. That is, death rates move downward from 179 deaths per thousand at the no education level to 123 at the primary level and

104, 95, and 67 deaths at middle, secondary and university levels respectively. Thus, unlike the education-fertility relationship, the education-mortality relation shows simple linearity.

Table 6. 20
Education and Child Mortality Rate

Educational Attainment	Number of births	Number of Deaths	Deaths per Thousand
No Education	267	48	179
Primary School	73	9	123
Middle School	48	5	104
High School	63	6	95
Post-Secondary & University	89	6	67
All	540	74	137

The expansion and the access of primary health care services are considered to be a major factor in the rapid decline in infant and child mortality rate in developing nations of Africa and Asia. Therefore, access to primary health care may explain differences in child mortality rather than education. However, all the villages under this study have easy access to health centers operated either by the Aga Khan Health Services or and by the government health services. Hence differentials in child mortality cannot be explained by this factor.

Given the above data on child mortality in terms of survival rate, the number of children died, and the number of deaths per thousand births, it is evident that when age, income, occupation and health care services are taken into consideration, children of educated mothers, even those with little education, have a better chance of surviving upto adulthood than those whose mothers have no education.

Having discussed the impact of education on child survival and mortality the next section examines the impact of mother's education on child care practice during and after pregnancy.

Hypothesis: 6 Educated women are likely to take better care of their own health during pregnancy.

Pre-natal and post-natal care plays an important role in the survival of new borns. Most women in developing countries, particularly the rural areas have limited access to knowledge of how to take appropriate care of their own health during pregnancies, except through traditional customs handed down from the older generation to the younger ones. In the Gilgit Agency health services disseminate this knowledge by encouraging pregnant women to visit the health centers regularly (at least once a month) and explaining to them the importance of taking certain vaccine and nutritive diet.

To assess respondents level of knowledge regarding self-care during pregnancy an open-ended question was asked of all the respondents. The responses to this question were then categorized into four groups as : i) no knowledge at all, ii) to avoid overwork and to carry heavy load, iii) regular visit to the health center for check-ups or/and vaccine and iv) eating protein based diet. These categories were then further collapsed into two, no knowledge and some knowledge.

Table 6. 21 gives percentage distribution of women responding with no knowledge and some knowledge according to their educational attainment. A glance at the table shows that overall 32% of respondents indicated having no knowledge of taking self-care during pregnancy, but for women without any schooling 57.8% had no knowledge. This percentage decreased constantly with increasing schooling, to a low of 16.7% among women with post-secondary or university education.

Further, a close examination of the percentage distribution of women within each level of education reveals that as the level of education increases, the percentage of women with some knowledge of self-care also increases, and having no knowledge decreases. For instance, compared to 42.2% of women in no schooling category, the educated women group shows 68.8%, 79%, and 83.3% among primary, secondary and university education respectively. This suggests positive relationship between education and self-care knowledge.

Table 6. 21

Percentage Distribution of Respondents Knowing How to Take Self-care During Pregnancy by Level of Education

Level of Education	No Knowledge	Some Knowledge	Row Total
No Education No.	26	19	45
Row %	57.8	42.2	30.0
Primary Sch. No.	5	11	16
Row %	31.2	68.8	10.7
Middle Sch. No.	4	15	19
Row %	21.0	79.0	12.6
High Sch. No.	7	27	34
Row %	20.6	79.4	22.7
Post-Secondary & University No.	6	30	36
Row %	16.7	83.3	24.0
All No.	48	102	150
%	32.0	48.0	100

(Missing Value = 2)

Table 6.22 presents the percentage distribution of respondents who indicate specific knowledge of health care during pregnancy--to avoid overwork and heavy load, regular visits to the health center, and nutritive diet. The percentage of women with knowledge of the above categories is calculated individually, which means that a woman having knowledge of all three categories will appear three times in the data.

The percentage distribution of women being aware of the effect of overwork or carrying heave load ranges from 8.9% among those with no education to 36.1% among those with university education. Similarly, percentage of women having knowledge of regular checks and nutritive diet also show a similar pattern--increasing from no education (26.6% and 22.2%) to that of post-secondary and the university level (55.5% and 69.4%) respectively. Thus, it is evident from the above analysis that more educated women have knowledge of self care than those with no education.

Table 6. 22

Education and Specific Knowledge of Self-Care During Pregnancy

Level of Education		No over-work and heavy load	Regular Check-ups & vaccine	Nutritious diet	Row Total
No Education	No.	4	12	10	45
	Row %	8.9	26.6	22.2	
Primary Sch.	No.	2	9	6	16
	Row %	12.5	56.2	37.5	
Middle Sch.	No.	5	8	8	19
	Row %	26.3	42.1	42.1	
High Sch.	No.	6	18	15	34
	Row %	17.6	52.9	44.1	
Post-Secondary, University	No.	13	20	25	36
	Row %	36.1	55.3	69.4	
All	No.	30	67	83	150
	%	20.0	44.1	55.3	

Education and Child-care Practices: Immunization of children

Hypothesis 7: Educated mothers are more likely to visit health centers in order to give appropriate vaccination to their children and to have their growth checked regularly.

Nutrition, immunization, and regular growth checks are three major factors which play an important role in reducing mortality rate among children, especially in the formative years of 0-5.

The dependent variable that can be identified from the above hypothesis is immunization of children. The information concerning immunization was recorded by asking a simple question of each respondent: "how many of your children are vaccinated." The responses are recorded as "all", "some", and "none". The percentages of women giving the above responses are cross tabulated by their level of education, and the data are presented in Table 6. 23

Percentages of women indicating that only some of their children were vaccinated are significantly higher (35.6%) among those women who had no schooling than among those who had some to high school education (6.7%). In fact, a very low percentage of women reported that none of their children were vaccinated, and these are all from those who had no education. Thus, it

may be suggested by the analysis that educated mothers are likely to vaccinate their children, but levels of education do not influence these outcomes.

Table 6. 23

Mother's Education and Vaccination of Children

Level of Education		Yes : All	Some	None	Row Total
No Education.	No.	27	16	2	45
	Row %	60.0	35.6	4.4	32.7
Primary Sch.	No.	14	1	0	15
	Row %	93.3	6.7	0	10.9
Middle Sch.	No.	17	0	0	17
	Row%	100	0	0	12.3
High Sch.	No.	28	2	0	30
	Row %	93.3	6.7	0	21.7
Post-Secondary & University	No.	30	0	0	31
	Row %	100	0	0	22.4
All	No.	116	19	2	138
	%	84.8	13.8	1.4	100

(Missing Value = 14)

<u>Hypothesis 8: Educated women tend to have better knowledge and understanding of child-care practices</u>

Table 6.24 presents the percentage distribution of respondents knowledge of child-care practice by their level of educational attainment. The major dependent variable derived from the above hypothesis is adequate knowledge of child care practices. The information regarding this variable was gathered by asking an open-ended question to each respondent: "How do you take care of your children?" The responses offered to this question are organized into six categories as follows: (i) no knowledge, (ii) regular checks for growth, (iii) immunization doses, (iv) nutritive food, (v) cleanliness and personal hygiene, and (vi) importance of breast-feeding.

Table 6. 24

Percentage Distribution of Respondents' Knowledge of Child-Care practice by Level of Education

Level of Education		No Knowledge	Some Knowledge	Row Total
No Education	No.	15	30	45
	Row %	33.3	66.7	30.0
Primary Sch.	No.	2	14	16
	Row %	18.7	81.3	10.7
Middle Sch.	No.	4	15	19
	Row %	15,8	84.2	12.6
High Sch.	No.	0	34	34
	Row %	0	100	22.7
Post-Secondary & University	No.	0	36	36
	Row %	0	100	24.0
All	No.	21	129	150
	%	14.0	86.0	100

The analysis of data from the table shows that of 150 respondents, only 21 (14 %) had no knowledge whatsoever about child care, but (33.3%) of those with no formal schooling had no knowledge. This percentage decreased with each increment of school, and no respondent with secondary or university education displayed no knowledge of child care practice. The percentage distribution of those who have some knowledge of child care practice indicates an increase with increase in educational attainment, ranging from 66.7% to 100% from no schooling to university education. This suggests that more educated women even with some schooling, tend to know more about child care than those without any schooling.

Further analysis of a specific knowledge concerning child-care practice is presented in Table 6. 25. Like the analysis of eduction and specific knowledge of self-care during pregnancy, the percentage of the respondents in each category of is a percentage of the women who gave responses within each category. The table indicates an overall positive relationship between education and the knowledge of child care in that those without schooling display less knowledge than those with secondary and university education, except in the case of knowledge concerning the importance of breast feeding.

Table 6. 25

Percentage Distribution of Respondents Understanding about Specific Child-Care Practice by Level of Education

Level of Education	Regular checks for growth	Immun-ization	Nutrit-ive food	Perso-nal Hyg-iene	Breast-feeding	Row Total
No Education No.	15	3	22	7	26	47
	31.9	6.4	46.8	14.9	55.3	30.9
Primary Sch. No.	9	4	8	2	14	16
	56.2	25.0	50.0	12.5	87.5	10.7
Middle Sch. No.	7	2	10	4	15	19
	36.8	10.5	52.6	21.0	93.7	12.5
High Sch. No.	12	4	25	8	21	34
	35.2	11.7	73.5	23.5	61.7	22.3
Post-Secondary & University No.	16	9	30	16	19	36
	44.4	25.0	83.3	44.4	52.7	23.6
All No.	59	22	95	37	95	152

However, there is no consistent positive relationship of education to any specific category of knowledge of child-care except nutrition. For example, the highest percentage of women knowing the importance of immunization is in two categories: women who have completed primary school and those who have completed post-secondary or university education. In a similar vein, the lowest percentages indicating knowledge about the importance of breast-feeding his displayed by women with no education and those with higher education. This can be attributed, perhaps, to the modernization that has taken place in the area, with more and more educated women choose to use bottled milk than breast-feeding. Such phenomena has been observed in the literature of many developing countries. But that does not explain why women with no schooling display a very similar percentage in this category.

From the comparison of table 6.23 and 6.25, an interesting point has emerged. That is , despite of only 14.6% of 152 women indicating knowledge of the importance of immunizing their children against diseases, in actual practice 84% of the respondents have reported that all their children have been vaccinated.

In light of the analysis concerning the impact of education on knowledge of self-care during pregnancy and child care practice, it is evident that a higher percentage of educated women have displayed specific knowledge on the above two variables. Nevertheless, some percentages of women without formal schooling have also displayed knowledge concerning self-care and child care practice. This can be interpreted as the "spill over" effect of education and the availability of health services discussed earlier, but there are also specific agency health practices which likely contribute to it.

It was observed through visits to various health centers and through informal conversation with local health visitors that each health center maintains a full record of all pregnant women and all children under the age of 10 years. They also maintain records for each child's vaccination and follow up doses. Further, the local health visitors calls on each family in the village once in a while to encourage them to use health facilities. Thus, due to these efforts on the part of health services to improve women's understanding of neonatal and post-natal conditions, all women of child bearing age have gained better knowledge for self-care during and after pregnancy and the importance of taking proper child care during the formative years of their children.

Thus, although the earlier discussion indicates an inverse relationship between education and child mortality, and a positive relation between education and knowledge of self-care and child care practice, the impact of primary health care cannot be denied. Therefore, it may be suggested that integrated efforts of improving women's access to education particularly at high school level together with health education through health care units will reduce child mortality rate in the Gilgit Agency.

Education and Women's Labour Force Participation

Discussion in the literature on the subject of female participation in gainful employment has focused on its role in economic development, family formation, the status of women and fertility. The focus of the analysis in this section is on the impact of female education on (i) women's entry into paid labour force in the modern sector of economy, (ii) differential earnings of women, and (iii) the impact of women's work activity and income on fertility. The method of analysis used in this section is again cross-tabulation

of two dependent variables--labour force participation in the formal sector and income differentials--with the level of formal schooling as an independent variable.

A women's decision to enter the labour force is subject to various factors involving economic, social, moral and practical considerations, some of which are associated with the roles women are expected to perform during the life cycle. The factors affecting women's entry into the formal labour force in the Gilgit Agency are not different from the above mentioned factors. However, before discussing the relationship between education and female labour force participation, it is essential to examine women's changing roles in light of the social and economic developments which have been taking place in the Gilgit Agency in the last decade.

As mentioned earlier, the economic development in the Gilgit Agency commenced with introduction of the Aga Khan Rural Support Programme in 1982. Similar to the development of rural economy in other developing countries, women's economic role in the Northern Areas was confined to work on the family farm. However, the increasing access to education, expansion of health services, and rural development programs, have opened many employment opportunities for educated women in the area. Further, the expansion health services and of formal schools for girls required female teachers, local health visitors, nurses and doctors; which opened up employment opportunities for educated women in the area. AKRSP's rural development programme opened up more opportunities for women in the field of agriculture and rural economy. In view of the development and rapidly growing rural economy, this section will examine to what extent exposure of women to education has improved their entry into paid labour force as well as their earning capacities. The impact of women's entry into the paid labour market and income on fertility level is also discussed in the light of the evidences.

Education and Female Labour Force Participation (LFP)

Hypothesis 9: Education is positively related to women's entry into paid the labour market, particularly in the modern sector of the economy.

Economic factors are of basic importance in determining the extent of employment opportunities available to both men and women. However, the

level of education improves women's chances to enter into the labour market and it improves women's competitive position in the labour market. Examining women's total labour force participation in the traditional and the modern sector will give a general picture of women's contribution in the labour market. Secondly, the percentage distribution of women in the traditional and the modern economy by their level of schooling will indicate the impact of education on women's labour force participation rate.

Table 6. 26 indicates the percentage distribution of active and inactive women in the labour market. The sexual division of labour in the Gilgit Agency for girls begin at a very early age and continues after marriage until very old age. The percentage distribution from the table reveals that of 152 married women between the ages of 15 to 44 years, only 14 (9.2%) are not involved in any economic activity compared to 93 (61.2%) involved in the traditional sector and 45 (29.6%) involved in the modern sector of the economy. The traditional sector here refers to agriculture and the modern sector refers to paid employment in the fields of education, health, and rural development programs.

Table 6. 26

Female Labour Force Participation Rate

Inactive (Not in labour force)	Active Traditional		Active Modern Sector	Total
	Unpaid	Own a/c		
No. 14	80	13	45	152
% 9.2	52.7	8.5	29.6	100

Women involved in the traditional sector consist of those who are working as unpaid family workers in agriculture, and those involved in the small family business and casual labour work. From the above data it is evident that more than 50% of the female population in this study are gainfully engaged in economic activities, but are not earning wages in terms of cash or kind.

The economic contribution of these women is high but it is not reflected in the Gross National Product (GNP), as the majority of women and girls in the Gilgit agency are unpaid family workers. Within the traditional sector 52.7% of women are family farmers compared to 8.5%, who earn

minimum wages as casual laborers or work in small family business. The majority of women employed in the modern sector are working in the service sector as teachers, local health visitors, and nurses, which comprise 29.6 % of the sample. Of these a handful of women are working as district coordinators in the "women in development" section of the AKRSP, involved in the agriculture economy.

Table 6. 27 presents the percentage distribution of women in four categories by their level of education. The data presented in the table show that women's participation in the labour force, particularly in the modern sector, is associated with the level of educational attainment. For instance, of 23.7% of women with post-secondary and university education only 5.6% are economically inactive--not working--whereas 94.4% are employed in the professional occupations such as, teaching, nursing, or social organizers in the AKRSP's development projects.

Comparing the above situation to women with no education or primary to middle schooling, it is evident that of the 30.9 % women who have not received any kind of formal education about 83.0 % are involved in unpaid family farming, 6.4 % work as petty traders or as casual laborer, and 10.63 % are inactive. A similar pattern is observed among women with either primary or middle schooling. Although, some percentages of women with secondary education (61.8 %) are also involved either in unpaid family farming or in petty business, none of the women with no education or primary to middle school education are employed in the paid labour force of the modern sector. At the same time no women with post-secondary or university education are involved in unpaid family work or low paid casual labour. However, about 5.6% of women in this educational group are economically inactive.

Table 6. 27
Education and Women's Occupation

Level of Education		Not Working	Unpaid Family Worker	Casual Laborer or own Account	Professionals	Total Row
No Education	No.	5	39	3	0	47
	Row%	10.6	83.0	6.4	0	100
					0	30.9
Primary Sch.	No.	2	10	4	0	16
	Row%	12.5	62.5	25.0	0	100
						10.5
Middle Sch.	No.	3	12	4	0	19
	Row %	15.8	63.2	21.0	0	100
						12.5
High Sch.	No.	2	19	2	11	34
	Row%	5.9	55.9	5.9	32.3	100
						22.4
Post-Secondary & University	No.	2	0	0	34	36
	Row%	5.6	0	0	94.4	100
			0	0		23.7
All	No.	14	80	13	45	152
	%	9.2	52.7	8.5	29.6	100

Further analysis of female labour force participation in each category of occupation shows that, compared to those without schooling fewer percentage of women are inactive with some to higher education. In the unpaid family farming and casual labour work similar pattern of labour force participation has been observed. However, in the modern sector of economy the pattern is reverse. That is, a smaller percentage of women with secondary and tertiary education are economically inactive.

It is obvious from the above discussion that education is positively associated with women's entry into the paid labour market. Further, women's entry into modern sector employment is positively associated with the level of their formal schooling, particularly at the post-secondary and at the university level. It is also evident from the data that women with no education or little education continue to pursue traditional work in agriculture or petty trading, while those with secondary and higher education tend to pursue employment outside the home and in the non-agricultural sector of economy.

Education and Income Distribution

Hypothesis 10: Women's differential earnings is strongly associated with the level of educational attainment

Differentials in earning capacities of persons with differential level of education can be attributed to education itself in developing societies as private returns to investment in education is higher in these societies than in industrialized societies. However, the relationship between education and earnings in the case of married women is complicated. It depends not only on the level of education but also on factors such as the desire to work for psychological and economic reasons, the probability of finding employment and the role compatibility between employment and motherhood.

In this section the focus of analysis is primarily on the relationship between the level of women's education and the average earning capacity in terms of monthly income. The information on women's occupation and earning capacity was collected by asking two specific questions--what is your present occupation and what is your monthly income? These data are then cross tabulated by respondent's level of education.

Table 6. 28 presents the percentage distribution of women in the four categories of income groups from no income to low, average and high income by their level of schooling. The pattern that emerges from the findings presented in the table is similar to the education-occupation relationship discussed in the last section. That is, the higher the level of education the higher the income.

It is apparent from the data in the table that women, with no education to middle-school education, fall into the no income or low income groups. For example, of 47 women without any schooling, 93.6 % are unpaid family workers, and 6.4 % are in the low income group. However, within these two income groups a positive relationship exists between education and earning capacity. That is, when women in the primary and middle school categories are compared to those with no education, between 21% and 25%, compared to 6.4%, are in the low income category.

Table 6. 28

Women's Educational Attainment and Income Distribution

Level of Education		Unpaid and no income group	Low income Less than Rs. 500	Average income Rs.1200-1500	High income Rs. 1501-2500+	Total Row
No Education	No.	44	3	0	0	47
	Row %	93.6	6.4	0	0	
						30.9
Primary Sch.	No.	12	4	0	0	16
	Row %	75.0	25.0	0	0	100
						10.5
Middle Sch.	No.	15	4	0	0	19
	Row %	78.9	21.1	0	0	100
						12.5
High Sch.	No.	21	2	11	0	34
	Row%	61.7	5.9	32.4	0	100
						22.4
Post-Secondary & University	No.	2	0	26	8	36
	Row %	5.6	0	72.2	22.2	100
						23.7
All	No.	94	13	37	8	152
	%	61.0	8.5	24.4	5.2	100

Further examination of the data in the table indicates that a women's chances of earning higher income dramatically increases with secondary and university education. That is, the percentage of women earning over Rs. 1200 goes from zero percent of women with less than high school to 32% of women with high school, and 100% of women with postsecondary education earning. That is, only women with higher educational attainment have higher earnings and none of the lower educational group have higher income.

However, it is noteworthy that nearly 62% of women with completed high school are either not working or engaged in low paid economic activities. The reason for this situation can be attributed to the unavailability of appropriate jobs in the field of teaching or nursing in the village, and besides these category of occupations these rural women have no other options than to go back to traditional sector--family farming or petty trading. Thus, from the preceding discussion it is evident that, women's education is positively associated with higher income differentials. However, the availability of employment opportunity also determines women's entry into

the paid labour force, and consistently high rewards for schooling require post-secondary education.

Relationship Between Women's Economic Activity and Fertility

Hypothesis 11: Women's participation in the paid labour force is inversely related to fertility.

The interrelationship between fertility and female labour force participation has been explored in numerous studies discussed in chapter two. That is, in general women's employment is a powerful means of reducing fertility. This section reviews and analyses the data in order to perceive the fertility/labourforce participation relationship in the case of women in the Gilgit Agency.

In low-income countries it has been inferred in general that, " a high level of fertility would be encouraged to the extent female (labour force) participation was low (for) if there were few opportunities for income earning, the cost of childbearing would be reduced" (Standing, 1983: 519). Further, it is an accepted fact that the opportunity cost of children is low for women doing agricultural work, in particular for those on family farms where work schedules have been assumed to be flexible and children can be combined with work rather easily (Davanzo and Lee, 1978).

Analysis of the variation between mother's occupation and her fertility level confirms the inverse relationship between the nature of women's occupation and fertility. The data presented in table 6.29 suggests that mean fertility among women who are working away from home in the paid labour force in the modern sector of economy, is lowest (2.53) compared to those who are working at home or in agricultural sector (3.66 and 3.57). Further, there is no significant difference in the fertility rate among the first three groups, but those working in the agriculture sector have a lower fertility rate than those who are engaged in petty business or economically inactive.

The reason for a high fertility rate among these groups may be attributed to the fact that women in these groups are employed in family farming or on their own account at home which does not imply a strict schedule and allows them to combine two activities-- work and child-care. Secondly, the cost of bearing a child for these women is not as high as those who are employed in professional work as teachers or health visitors. Thus,

fertility in this study is higher in the case of home based occupations and lower in the case of occupations that require women to work away from home such as teachers and health visitors. That is, women in non-agricultural and non-familial have lower fertility levels than others in this study. Many studies conducted in the developing nations have reached similar conclusions (Kasarda, 1971; Chi and Haris, 1975; Hass, 1971; Maurer, et. al., 1973; and Leopeapai,1977).

Table 6. 29
Women's Occupation and Fertility

Occupation	Fertility Rate*
Not working	3.61
Unpaid family farming	3.57
Own account	3.66
Professionals	2.53

*** Mean Number of Children Alive**

Further, the percentage distribution of women by type of occupation and fertility level presented in table 6. 30 reveals that for women with employment in the paid labour force--professionals--the percentage in the low fertility group is 77.8 , wheras for those working on their own account it is 38.5% and those in unpaid work it is 15.0%. Thus it seems to be possible to rank unpaid work through own account to professinal work on an ordinal scale, when considering their impact on fertility.

However, women who are not active in the labour market do not fit on this scale. In their case highest percentage is in the low fertility group and lowert percentage are in the high fertility group. It is not clear why this is the case.

It is evident from the above analysis of data that women's occupation affects the level of fertility and women in the agricultural sector or family farming tend to have higher fertility level, than those with paid employment outside the home. The hypothesis that, women's work and opportunity to income is inversely associated to fertility decline is most widely accepted

economic hypothesis. Though, this relationship remains unclear in the literature, in case of women in the Gilgit Agency, the nature of occupation and differential earnings indicate an inverse relationship to fertility decline.

Table 6. 30

Percentage Distribution of Respondents by Occupation and Fertility Level

Type of Occupation		Low Fertility	Medium Fertility	High Fertility	Row Total
Not Working	No.	7	5	2	14
	Row%	50.0	35.7	14.3	100
					9.2
Unpaid Work	No.	13	27	41	80
	Row%	15.0	33.7	51.3	100
					52.7
Own Account	No.	5	3	5	13
	Row%	38.5	23.0	38.5	100
					8.5
Professionals	No.	35	10	0	45
	Row %	77.8	22.2	0	100
					29.6
All	No.	60	45	47	152
	%	39.5	29.6	30.9	100

In light of the analysis of data and results presented in this chapter, some conclusions and interpretations are drawn, which are discussed in the next chapter.

7. CONCLUSION AND POLICY IMPLICATIONS

This study has been explicitly concerned with the role of education in improving the quality of women's lives in the Gilgit Agency in north Pakistan. Do educated women bring attitudes, knowledge and skills acquired in school into their life situations which have an impact on all aspects of their lives? The major objective of this research was to investigate the extent to which women's education serves as a determinant in (i) declining fertility levels; (ii) differentials in family size (iii) attitudes, knowledge, and practices of modern contraception; (iv) declining child mortality levels; (v) the inculcation or a better understanding of child-care practice and effective use of modern health facilities; (vi) increasing female participation in the paid labour force and their level of earnings.

The results of the study were analyzed in an attempt to test eleven major hypotheses. Based on these results and analysis the conclusions are drawn and policy recommendations are suggested to improve the state of women's education in the area.

Methodological Issues

Whilst this analysis provides some interesting findings, care must be taken, however, in their interpretation. Several methodological and other problems were encountered in the collection of data from both primary and secondary sources. Besides inconsistency and the scarcity of comparable and reliable data at the national and the local levels, there was a problem of communication arising from the usage of different local languages--Shinah, Wakhi and Burushaski--in the area. Also there was difficulty in obtaining accurate household data such as household income, sources of this income, age and education of each member of the family, etc. A problem was also encountered in the interpretation of some sensitive questions concerning the use of contraception and child-care practices.

Despite the above problems, an attempt has been made to be as accurate as possible in the collection of data by creating intentional redundancies. For example, the age of a respondent was cross-checked by asking date of birth, age at marriage and number of years married, and by referring to the family folders of the Aga Khan Health Services. Similarly, the number of children

alive and those died were also checked by asking a direct question and by completing a pregnancy form for each respondent. Thus, omissions and errors in data collection have been reduced to minimum.

The second major methodological problem arose from the inconsistency in the data available in the secondary documents such as government census reports, five year plans, and private unpublished surveys prepared by various organizations. This form of statistical problem was particularly encountered in the analysis of educational data such as literacy rates, enrollment rates and continuation rates. Hence, these statistics need to be treated cautiously.

In addition there are statistical limitations in the primary data. Due to the small sample size generalizations must be treated as tentative. For example, the age specific fertility among educated women of 30-34 years of age indicates an increase in fertility with increasing education. This increase is due to the fact that there are only two respondents in this category, one with 4 children and one with 8. The respondent with 8 children had all girls, and sex preference for boys may have been more powerful then education in determining family size.

This study is limited to one major type of analysis--cross tabulation techniques, although multiple regression was used in determining the most significant independent variable influencing the relationship between education and fertility. Besides the impact of age, income and nature of work other variables were not included in the analysis. Some were, however, controlled by the sample selection (e. g. all were from the same religion) .

Finally, certain statements and conclusions were not based on statistical analysis but on observations made during the field research through informal conversation with local people, by visiting health centers and other organizations, and by using private libraries of individuals and NGOs. These observations may therefore contain subjective views of people or researcher. For instance, the fact that contraceptive was a controversial issue in Islamic thought was identified through an interview with a family planning social worker and health and education officers. Possibly a more careful analysis of Islam or the opinions of the women themselves would put this "fact" in a different perspective.

Education and Fertility Relationship

Many theorists have posited that higher literacy and exposure to formal education play an important part in fertility decline. This has also been indicated in many research documents, but the most important and comprehensive of all the documents on fertility patterns is the World Fertility Survey (WFS) undertaken by the United Nations in twenty two countries around the world. The primary objective of the WFS at the time of its establishment was to meet the need for reliable and up-to-date information on human fertility by carrying out nationally representative, internationally comparable and scientifically designed and calculated surveys.

One of the major achievements of the WFS is that it has contributed greatly to the provision of more trustworthy data on vital rates than were hitherto available, particularly in many developing countries of Africa, Asia, and the Middle East where there was a dearth of well conducted census or previous surveys (Gille, 1985: 275). Thus, the analysis, results, and insights provided by the many researchers on the WFS have been employed in comparing the results and findings of this study in order to arrive at valid generalization for policy recommendations.

Education and Fertility Change

Summary and Discussion

With regard to fertility level, the measure of cross-tabulation analysis in terms of total fertility level reveals that overall, education has an inverse relation with fertility, but this relationship is not monotonically inverse, i.e. one which decreases with increases in each level of educational attainment. For example, the fertility level among women with primary and middle school education is lower compared to women with no education, but the highest fertility decline has been observed among women with high school diploma. Beyond high school, the fertility tends to increase among women with post-secondary and university education. However, this upward trend in fertility rate at the post-secondary level remains lower than the fertility level of those with no education or those with only primary education.

If we consider age-specific fertility rates, we also find support in our data for the overall inverse relationship. It is however clear that much of the

difference among these women is accounted for by the confounding of the age and education variables

A second fertility related measure, the percentage distribution of respondents in low, medium, and high fertility groups, support the findings of an inverse education-total fertility relationship. This relationship appears to consist of a complete shift away from high fertility and moving towards low fertility for all levels of schooling, especially between the age of 20-34 years. However, there is a slight increase in fertility among those with high school to post-secondary and university education.

The inverse relationship between education and fertility is well documented in the literature. For example, Jain and Nag (1985) in case of India have noted that, advancement in female education can be expected to influence fertility behavior even without simultaneous changes in other factors. Similarly, studies in South East Asia--South Korea, and Taiwan (Jones, 1978), and Thailand (Goldstein, 1972)--confirmed the inverse relationship and noted that education plays a key role in fertility reduction. Many studies using simple correlation or cross-tabulation method, controlling for age of respondents have also reported a strong inverse association between education and fertility (Kasarda, 1971; Kirk, 1971; Ekamem, 1972; Repetto, 1974; and Birdsall, 1974).

As mentioned earlier, the inverse relation between education and fertility in this study is not monotonic throughout each of the five educational strata, but takes a curvilinear shape. Similar results have been noted by the United Nations (1983: 84) examination of WFS data of 22 countries, which allows two conclusions: i) generally, education has a negative effect on fertility but not universally so. ii) often the relationship, instead of being monotonic, may be curvilinear or a hump shaped pattern with the threshold for the onset of education's negative or positive influence on fertility being present among countries just beginning to develop.

The difference between the findings in this study and the WFS is that, though the relation in this study is not monotonic, it contains no threshold. That is, decline in fertility begins with minimum level of schooling--primary education. Secondly, the society in the Gilgit Agency is just beginning to witness the results of modernization, which means like other WFS countries this society is at the onset of development.

Another similarity in the results between this study and the WFS is that women with secondary education in this study have the lowest number of children. Similarly, among WFS participating countries women with secondary schooling have fewer children (Gille, 1985: 278). However, it should be again noted that education-fertility studies which do not control for age in countries which have recently introduced schooling will almost inevitably be curvelinear.

According to WFS as well as many other individual or cross-sectional studies in developing countries the education-fertility link exhibits an inverse relationship with many variations. A modest increase in exposure to schooling may cause fertility to rise instead of lowering it. Two major reasons attributed to such behavior are schooling's influence on shortened lactation and shortening of sexual abstinence after the child birth (Ware, 1978; Caldwell, 1976; Cochrane, 1979, Sing and Casterline,1985; Cleland and Hobcraft, 1985; and Gille, 1985). However, in the case of the Gilgit Agency the traditional norms and customs of breast-feeding and postpartum abstinence are still in existence, which may contribute to the inverse relationship between education and fertility not displaying a threshold value.

The reasons for a slight rise in fertility among women with higher education in this study may lie in women's higher income, in a preference for boys over girls, and in educated women tending to delay the marriage hence have more children in the early years of marriage. Similar findings have been noted in several studies in the literature. For example, educated women who marry late tend to bear more children soon after marriage (Caldwell, McDonald and Ruzica, 1980; DeTray, 1977). Moreover, educated women who are employed in the paid labour force who have a better income than those with some or no education also tend to have higher fertility (Heer, 1966; Friedlander and Silver, 1967; McCabe and Rosenzweig, 1976). The United Nations 15 countries analysis show that son preference appears strongly in Bangladesh, Nepal, Korea and Pakistan, all of which are Asian countries (1983). According to Pullam (1985), due to this preference, women are more likely to have another child if they have all daughters than if they have all sons.

Thus, the analysis of the empirical data has demonstrated the validity of three hypotheses of education and fertility relationship:

- education is inversely related to total fertility,

- the age specific fertility shows inverse relationship between education and number of children born, and
- the relationship between education and fertility is not monotonically inverse but takes a slight curvilinear shape.

As mentioned above, the findings concerning the relationship of education with fertility pattern indicates an inverse relationship without an educational threshold. Given the fact that many girls (97%) in the area have access to middle school education, it can be anticipated that within the next few decades the cohort of women in the reproductive age which have a low level of education, will be replaced by others with relatively higher levels of schooling. This will have a number of implications: (i) Since educational threshold to declining fertility rate is not applicable in this area, improved literacy rates among females of reproductive cohort will generally reduce the fertility rate in the long run. (ii) Easy access to formal schooling at least up to middle school level may delay age at marriage and sexual union, which undoubtedly will constitute favorable factors for the future decline in fertility rate.

One of the strongest inverse relationship in this study is found between women's secondary school attainment and fertility. However, as noted in Chapter Four, the availability and accessibility to educational institutions particularly at the secondary and higher level is very limited for girls in the area. This indicates that few women in this category will reach secondary school education. Therefore, when taking a broad view of Government policy to consider education as an important factor in controlling population growth, improving girls' access to secondary schools should be given a topmost priority.

In the community there is a great demand for more girls' schools. To fulfill this demand the AKES has developed a strategy whereby the local community provides the land, labour and local building materials to build a school, and the AKES will provide teachers and operating cost to run school. This cooperative strategy results in self-help schools. Through this approach a number of schools have been built in the area. Such cooperative strategy will increase girls' access to education at least either to primary or middle school level which in turn may contribute to the fertility decline.

Moreover, the phenomenon of modernization--economic development and industrialization--is among the most important variables

influencing fertility patterns in the world. Modernization in terms of economic development--change of economy from subsistence agriculture to market oriented agriculture--and development is taking place in the Gilgit Agency since the opening of the Karakoram Highway in 1978. The percentage of female population receiving formal education and in paid employment has increased in the last five years and will increase considerably in the next few decades. It is this trend of an increasingly literate population and modernization which has reduced fertility in industrialized countries, according to fertility-transition theory.

However, studies conducted in developing countries have indicated that the process of modernization and development brings new ideas, values and attitudes, which replace traditional values, customs and taboos regarding breast-feeding and postpartum abstinence. These changes in traditional practices of contraception tend to increase the fertility rate in the initial period of the development. But the above traditional practices are strictly followed by both uneducated and educated women in the Gilgit area. Thus it may be concluded that with improved female education and and strong traditional practice will reduce fertility rate in the area.

Policy Implications and Recommendations

The policy implications in light of the above discussion are:

First, any policy decision regarding family planning programs on the part of the Government or non-government agencies, should seriously consider the influence of such determinants as breast-feeding and sexual abstinence on fertility control.

Second, in order to maintain the popularity of traditional factors in fertility control, policies to increase awareness of the importance of breast-feeding and the utility of social taboos, through the medium of education in general and health education in particular, should be given high priority.

Third, in order to counteract the erosion of traditional values (where such values are decreasing), implementation of an effective family planning program should be considered as an alternative measure to arrest some of the socio-economic problems which may promote high fertility due to the process of modernization.

Relationship Between Education and Desired Family Size

Summary and Discussion

The second fertility related factor examined in this study dealt with the effect of education on desired family size in terms of preferred and ideal family size. The hypothesis tested is that, the "number of children desired declines with increase in mother's educational attainment". It was found that the relationship between education and desired family size tend to decline with a few years of schooling, go upward at the high school level, and again decline at the higher education level.

However, there are two factors other than education that may have an effect on the desired family size. First, the number of additional children desired depends on the actual number of children alive, and the second is women's initial preference for a small or large family size also affects the number of children desired. It is evident from the findings that when actual family size is used as the control variable, the relationship between education and preferred family size is inverse up to the level of completed primary education, but increasing beyond this level. Therefore, it can be concluded that preferred family size increases with increase in educational level beyond primary education, but when actual number of children alive are taken into consideration the relationship is declining overall. Thus, the conclusion arrived by the WFS that, "the overall pattern of results throw some doubt on education as an effective agent operating via the following theoretical path: more education--->lower fertility value--->reduced fertility" may be applicable to education and preferred family size in the Gilgit Agency. It may be that women's preferred fertility is based on the rationalization model discussed earlier.

Another measure used with regard to the education-fertility relationship is ideal family size. The overall pattern of ideal family size as per level of education shows an inverse relationship with some irregularity occuring between primary and university level. That is, the number of women reporting 1-3 children as an ideal family size increases with a few years of schooling (1-7 yrs), but declines as the level of education increases from middle to high school and then again decreases at the university level. Similar results have been noted by the United Nations in Bangladesh in 1981. Thus, desired family size as a measure to assess effect of education on future

fertility rate fails to provide any conclusive results, as it is difficult to generalize the effects of other factors on ideal family size.

A limited number of studies have been noted in the literature concerning education and ideal family size. The major findings are from WFS reports which also indicate irregular pattern among various surveys from developing countries. For example, Cho (1978) in the analysis of five Asian countries found a higher desired family size among educated women of all ages in Thailand, Korea and Malaysia, but not in Pakistan and Nepal. A United Nations (1981) analysis of 15 countries indicated; different results from country to country--no effect, curvilinear with low at middle school, and inverse.

Policy Implications and Recommendations

As can be seen from the above discussion, with regard to desired family size, both measures of desired and ideal family size indicate that factors other than education have an impact. In this respect number of children alive and the concept of children as an insurance may play a role in women's initial preference. The implication for this is that the impact of education on child mortality rate and women's increasing participation in the paid labour force will, in the long run, bring an awareness favouring quality rather than quantity of children.

Another aspect of education that might have important bearing on family size is that it may bring a fundamental shifts in the way parental and grandparent generations regard children, a view which shifts from seeing them as an asset or insurance to an expenditure. According to Caldwell (1982), this reversal of the flow of benefits may be a key factor in smaller family size.

Thus, attitudinal change together with women's economic status will facilitate in changing initial preference from large family size to smaller family size, which in turn will reduce the fertility rate. Therefore, education cannot be regarded as the sole or principal cause of decline in desired family size, although its indirect impact should not be ruled out. Since eduction does not appear to be strong predictor of fertility desire, it is recommended that other factors such as gender preference of children, religion, and ethnic group may be important predictors, and should be explored in future research.

Summary and Discussion

The third important finding of this study concerns the effect of education on attitudes, knowledge and the use of modern methods of contraception or family planning. In general, education promotes and facilitates the acceptance of new and progressive ideas and practice. With regards to differential impact of education on the attitudes towards use of contraceptive devices to limit family size, the analysis led to an interesting observation. That is, the impact of education on attitudes towards family planning methods is positive, however, a high percentage (80.4%) of respondents without any formal schooling have indicated positive attitudes and approval of family planning methods. This suggests that factors other than education may be responsible for the general positive attitudes towards the use of contraceptions.

However, further investigation into the reasons for such approval clearly suggests that women with secondary and higher education have demonstrated better knowledge about economic and other benefits of using family planning methods, and those with no or some education considered health factors more important in using contraception methods. Though the majority of illiterate women have positive attitude towards the use of modern methods of contraception, it is through education that a better knowledge and awareness of the economic cost and social benefits of spacing children and having smaller family is disseminated. Such awareness in the long run may facilitate and encourage the greater use of contraceptions, which in return will contribute to controlling population growth in the area.

There may be another reason for such a high percentage of uneducated women having knowledge of family planning. According to the United Nations' analysis of 22 countries in the WFS (1983), correlates to measures of development which suggests that aside from social development in terms of health services and education, other channels of communication become increasingly available to all as development in a country gets underway. This provides a 'spill-over' effects of socio-economic factors, and as a country develops, a pool of uneducated women apparently gains more knowledge of contraceptive practices.

to other parts of Pakistan, new channels of communication began to filter in the knowledge of contraceptive practice and the importance of having small families for upward social mobility. This knowledge is received among general population including women without schooling. Such studies in the literature show that awareness of contraception prevails in most countries and in 24 out of 28 WFS countries 80% of married women were aware of the contraceptive methods (Vaessen, 1980; Carrasco,1981).

In addition, education is positively linked to knowledge and use of modern methods of contraceptions. For example, in both the categories of respondents--"everused" and "currently using"--the percentages of women increase with increase in educational attainment. However, in case of currently using category there is an education threshold appearing at the high school level, where percentage of respondents is lower than those with no education.

Moreover, like many developing countries, despite the positive attitudes and the awareness of benefits, modern methods of contraception are not extensively used either for spacing of the birth of the next child, or terminating fertility in the Gilgit Agency. Through observation and interaction with local people it was noted that some reasons for such a limited usage in the case of the Gilgit Agency are: a limited provision of family planning clinics due to the controversial issue of using contraception in the religion of Islam, and possibility that women in the area consider such use harmful to the health of mother and the future offspring. A number of respondents who are not currently using contraception have indicated such fear in informal conversation.

In a similar vein, Agyie (1988: 118) in the analysis of the use of contraception in Papua New Guinea has noted, "there was an overall awareness of some form of contraception in the majority of the respondents. However, the levels of overall usage, both previous and current, are low compared with the levels of awareness, and only a small proportion of those who know of a method actually practice it". The WFS reporting on South Asian countries has also observed that, in countries like Bangladesh, Pakistan and Nepal, in spite of extensive knowledge and awareness of benefits of contraception, the use of contraception devices to control or limit family size is very limited.

In addition, the analysis of the diffusion model regarding innovation in the stages of contraception in this study also confirms similar pattern of usage. Similar findings of the WFS presented by Tsui (1985) affirms the above pattern in case of developing countries of WFS. In light of the above discussion it is evident that, although education facilitates the acceptance of the new and progressive ideas concerning use of modern contraception, however, without the provision of family planning services and the availability of contraceptive devices, this information fails to be translated into practice in the adoption of contraception methods.

Therefore, the analysis of the effect of education on family planning methods indicates a positive relationship between education and attitudes and knowledge. However, the results also point to factors other than education such as the efforts of health services and the efforts of family planning social workers to disseminate knowledge of contraception methods.

In the case of adoption and usage of contraception method(s), the findings clearly indicate that there is a positive relationship between education and use of family planning method(s). However, compared to attitudes and knowledge the adoption of contraception in this society is at minimum level. The major reason seems to be limited provision of family planning programs and unmet need of women to acquire contraceptive facilities in each village. The WFS in this respect indicates that, "most health care studies have shown stronger declines in the utilization of both preventive and curative services with increasing distance from facilities". This is also true in Gilgit Agency.

Policy Implications and Recommendations

In view of the above discussion and implications, though strong positive relationship between education and fertility regulation in terms of contraceptive knowledge and use has been observed in this study, the variations at the higher level of schooling makes it difficult to conclude which level of education should be emphasized.

In addition, the factors such as age of respondents, income, husband's education and attitudes towards contraception methods are not included in this analysis. Thus, further research in these areas is necessary in order to have effective policy planning. However, some tentative policy implications are suggested below:

First, there is a great need to increase the family planning facilities at the village levels, which requires effective implementation of family planning program in the area.

Second, Gille commenting on WFS countries stated, "a combination of low desired fertility and reasonably widespread family planning service is no guarantee of the acceptance of birth control and declining fertility, as in many states of India, Bangladesh and Pakistan these two conditions appear to have been fulfilled but achievements have been modest" (1985: 283). Thus, in light of the above observation, and given the fact that religious and ethnic controversy surrounds the issue of contraception use in the area, it appears that the crust of custom and conservatism has to be broken through by a modicum of social, economic and political change before contraception becomes widely acceptable.

Third, education of mothers is a crucial element, as it provides them with greater status in the family which enables them partly to break away from traditional customs, and partly makes them aware of economic and health benefits. Therefore, provision of education to girls and adult women of reproductive age should be given serious attention in policy planning.

Impact of Education on Child Mortality Rate

Generally, the decline in child mortality rate in developing countries in recent years is attributed to improvements in public health care, medical services and factors such as, education, social and economic development. The evidence concerning the impact of education on child mortality have been analyzed through the use of a hypothesis concerning death rate of children between ages of 1-5 years olds and three other related issues. The related factors are influence of education on mother's knowledge of self-care during pregnancy, knowledge of child care practice and the implementation of such knowledge in terms of actual practice by visiting health services for regular growth checks and vaccination.

Summary and Discussion

The data with regards to child mortality rate in relation to mother's educational attainment reveals that with the increase in mothers educational attainment, the number of children who died between 1-5 years declined. Similarly, the data on mortality rate (number of children died per thousand births) also indicates an inverse relationship with mother's education. That is, with the increase in mother's educational level the mortality rate decreased from 179 per thousand birth among women with no education to 67 per thousand births among university graduates.

A third measure of child mortality in terms of percentage of respondents reporting 1-4 children having died also indicate the negative influence of mother's education on survival of children. Women with "some" to "higher" education are more likely to report the death of only 1-2 children compared to 1-4 children reported by women with no education. These percentage decreases in each category of child death (1 child to 4 children) from women with no education to primary level education and continue to decrease with increase in each level of education. Further, at the highest mortality level (death of 3 or 4 children) no woman, even with a limited amount of education has reported having experienced this level of child mortality. Thus, data indicates a negative relationship of education to child mortality.

Similarly results indicating a negative relation of maternal education with child mortality level are widely reported in the literature. It was Caldwell (1979: 407) in the analysis of Nigerian data who indicated that "mother's education is the largest single determinant of differences in childhood mortality". Since then a number of studies in developing countries have demonstrated similar negative influence of mother's education on child mortality rates. In the recent past many studies analyzing WFS data have also indicated similar patterns. That is, 1-3 years of schooling is associated with a fall in the risk of childhood death, and a further large decrease appears with successive increments in the mother's educational attainment (Cleland and Ginneken, 1989; Resrot-Bixby, 1985, Behm, 1982, Hobcraft 1984; Farah and Preston, 1982; Caldwell, 1979,1983, 1986; Levine, 1982)

Decline in the child mortality rate, according to some researchers, is due to increasing availability of health care services in developing countries. However, without an adequate knowledge of self-care during pregnancy and

appropriate knowledge of child-care practice, simple provision of health care services does not ensure that mothers will utilize them. Therefore, the indirect impact of education through the above factors has been analyzed. The data indicate a positive relationship between education and the knowledge of self-care during pregnancy. That is, the percentage of respondents with some knowledge of self-care is positively related to education and increases with each increment in level of education. However, the spill-over effects of the efforts of Aga Khan Health Service--to encourage all pregnant women in the village to use such services--cannot be ignored.

Further, the knowledge about child-care practice in terms of six specific responses identified in this study indicates that the majority of respondents having no knowledge of child-care practice are from the "no education", or from "primary" and "middle school" groups. The data shows that all the respondents with education levels from secondary and higher have a better understanding of child-care practice. However, one third of the respondents having no formal schooling also exhibited a good knowledge of child care practice, which again is attributed to the spill-over effects of availability of health services and to the modernization taking place in the area.

Finally, the impact of education on the actual practice of child-care in terms of preventive measures and giving appropriate vaccine to their children reveals that there is no significance difference between uneducated and educated women. Thus, the data fails to indicate a positive relationship between the level of education and actual child-care practice. The major factor responsible in immunization of all children is that of availability of such services and not the lack of motivation on the part of mother. Therefore, while the role of education is important in disseminating knowledge of child-care practice, the availability of health service in the rural society also plays an important role in the implementation of such knowledge to reduce child mortality rates.

In view of the discussion and interpretation of the results with regard to the relationship between maternal education and child mortality level, it could be concluded that mothers' education do plays an important role in survival of their children, and in contributing to the improvement of their knowledge and understanding of child-care practice. This will not only improve a child's chances of survival till adulthood, but in the long term such knowledge and understanding will contribute to the raising of well

nourished and healthy children, who will have better chances in achieving success in children's education and in their future lives.

Further, in view of the debate among health researchers and that of educationist over the effect of improved health care facilities or mothers' education on child mortality, and despite the spill-over effect noted in this study; it is possible to infer from this study that mother's education plays important role in the survival of children in the Gilgit Agency. In fact, it is evident from the high child mortality level among women without schooling that, despite the availability of health services, a child in the Gilgit Agency whose mother has some education (1-7 years) will have a 6% better chance to survive than a child whose mother has no schooling, and one whose mother has secondary education will have a further 11% chance to survive.

Secondly, educated women employed in the paid labour force have better income and financial resources than uneducated women who are mostly unpaid family worker or have low income. This might be one factor responsible for lower child mortality among them, as educated mothers may be more effective in seeking improved health facilities and better living conditions for their children. A similar argument has been presented by Cleland and Ginneken (1989: 20) that "an interaction between education and income and household facilities might be expected. That is, educated mothers may be more effective then uneducated mothers in translating financial resources and facilities into improved health and survival for their children". They further conclude that "the economic advantages associated with education (income, water, and latrine facilities, clothing, housing quality, etc.) account for about one-half of the overall-mortality association" (1989: 20). Thus, the above argument may be true for low childhood mortality rate among educated women.

Thirdly, with regard to the effect of education in terms of knowledge of child care practice and actual use of health care practice for immunization and growth checks, the study shows positive relationship to education. But with respect to actual use of health facilities, the study shows no difference in behaviour among educated and uneducated women. Thus, from the fact that equal access to health care facilities is available, and such facilities are utilized both by educated and uneducated women, it may be concluded that, education

rather than health care services explains the differential rate of child mortality.

Moreover, it is also evident from the data that the Aga Khan Health Services' efforts and outreach programme to cover every child for immunization and health care in its formative years, has not yet resulted in declining child mortality among women without schooling in the project area: (each village covered in this study has primary health care facilities in the form of Aga Khan Health Service or Government health service.)

From this perspective and the fact that both educated and uneducated women utilized such facilities equally, it is suggested that the impact of education on a child's survival chances should not be underestimated in the Gilgit Agency. Similar results have been noted in the literature. For example, according to Boss and Shapiro (1982) "large difference in relative risks of infant death across social class and educational categories still persist in developed countries. Further, most cross-sectional studies in developing countries demonstrate that the sharpness of educational inequalities in childhood mortality is unaffected by controls for access to modern health services" (Al Kabir, 1984; Borja, 1985; Yong and Edmonstone, 1983; and Mosley 1983).

Policy Implications and Recommendations

In light of the above discussion the policy implications are:

First, since most girls have access to education at least till primary or middle school levels, it may be suggested that the future cohort of women of childbearing age will benefit from the knowledge of health care and child care practice. However, more emphasis on health related education in general science subjects covering personal hygiene, storage of food and drinking water, basic knowledge of general diseases and its treatment in school curricula may improve the knowledge concerning child care of future mothers.

Second, the existing cohort of women in reproductive age of 15-49 years requires more attention in the policy planning for reducing child mortality rate in the Northern Areas including Gilgit Agency, which is higher (150-160 deaths per thousand births) than national figures for Pakistan (120 deaths per thousand births); and this study (i.e. 137 deaths per thousand births). Therefore, a policy to improve literacy and the knowledge of child care

practice particularly, of personal hygiene, cleanliness and sanitation, storage of food and drinking water, and basic knowledge of nutrition and child diseases among women with no schooling or some schooling will contribute significantly in lowering child mortality.

Such education could be introduced through adult education programme by integrating various community organizations, non-government institutions like that of Aga Khan network, and Government institutions. Further, UNICEF's recent child care programme GOBI--Growth chart, Oral rehydration therapy, Breast-feeding and Innoculation--can assist a great deal in achieving overall progress in imparting vital child care knowledge.

Education and Female Labour Force Participation

The focus of the analysis with regards to the impact of education on women's participation in the labour force comes from three hypotheses dealing with entry into the paid labour force, differential income, and the impact of employment on fertility rate.

Summary and Discussion

The data concerning female participation in the labour force shows that overall the majority of respondents (91%) were occupied in some sort of economic activity, either in traditional or modern sector of the economy. Of these nearly (61%) are employed as unpaid family workers or petty family business, 30% are in the paid labour force and the rest (9%) are not engaged in economic activities.

Comparing labour force participation by education, the data show that the highest percentage of women with secondary and higher education work in the paid labour force, and the lowest percentage were those with 5 to 7 years of schooling. However, the highest percentage of women with no education and some schooling (1-4 years) work in the unpaid labour force. The empirical evidence in the literature concerning female education and labour force participation in developing countries also showed such a mixed relationship. (Smock, 1981; Standing, 1978; Ram 1982). In some countries work force participation rates increase among women with greater educational attainment, but in others the relationship is curvilinear, that is,

those with little or no schooling have higher rates, and those with more schooling have lower rates, and those with highest levels of schooling also have high participation rates.

However, the analysis of data in terms of education and type of occupation reveals that women's entry into the paid labour market is positively associated with the level of education. Women with no education or lower educational attainment tend to cluster around low paid jobs such as domestic workers or in a petty family business, and in unpaid worker in the agricultural sector. Those with secondary, post-secondary and university education tend to go in higher paid employment such as, teaching, nursing or local health visitors, or into administrative positions in the rural development programs. Thus, it is evident from the data that women's education, particularly higher education, serves as a means of upward mobility into paid employment.

With regards to income distribution and earning capacity, the data shows that education like occupation, is positively related to women's differential earnings. It is evident from the data that the higher the level of education the higher the capacity of women to earn better income.

A number of studies in India and Pakistan have also suggested a positive relationship between education and participation in the labour market. For example, Sinha (1967) argued that female education above matriculation level results in a high rate of employment. Ram (1982) and Standing (1981) have asserted that increased in schooling among females raises their potential earning power and thus provides them with a strong inducement to seek employment, and to raise their occupational aspirations. It also provides them with the necessary credentials for employment in many jobs.

However, women's entry into the paid labour force and their earning capacity also depends on structural factors governing the labour market. In most developing countries the division of labour on the basis of gender and the structure of the labour market serve as the sorting mechanism both for male and female employment. These factors are also in operation in the Gilgit Agency for following reasons.

First, modernization in the area is a very recent phenomenon, and as such, due to the expansion in the field of education, particularly female education, more and more jobs were opened for qualified staff. The social

need and the availability of employment opportunities at the village level encouraged women with secondary and higher education to seek employment in the non-domestic fields, and to enter into the paid labour force.

Secondly, being a predominantly traditional Muslim society, women were allowed to do jobs where the demand for male members was minimum. For example, despite a great demand for female teachers in girls schools, there are more male teachers than female teachers. The main reason for this is that males have outpaced females in acquiring education as well as employment, because boys were first provided with educational opportunities and this was only afterwards followed by girls. However, with the exception of teaching, nursing and women's agricultural section in the AKRSP, all other high paying jobs in technical and commercial fields are reserved for men.

Moreover, due to the economic development taking place in the Northern Areas, the economy has shifted from a basic agrarian economy to a market oriented economy. This shift in the economy has created a need for highly qualified labour. Thus, qualified men who had migrated to cities in search of better paying jobs, have returned to the Northern Areas. Most high powered positions in the managerial category in all fields are occupied by qualified manpower, either from other parts of Pakistan or from other Western countries. As a result women are pushed into jobs such as teaching and nursing while all other high paying administrative jobs have been reserved for men.

Both the above factors may have a negative impact on women's labour force participation and income in future. This is evident from the fact that some qualified women are economically inactive due to their husband's higher position and income.

Third, there were about 50% of women with secondary schooling who were occupied in unpaid family farming. The reason for this is non-availability of employment in the teaching or nursing field and the restricted mobility on the part of these women to move from one village to another. Therefore, on the one hand restricted access to higher education limits women's entry into paid labour force, and on the other hand limited job market opportunities pushes educated women into traditional family farming.

Fourth, it is evident from the data presented in the chapter four that access to secondary and higher education is a major problem encountered by more females than by males, as (i) there are more secondary schools for boys than for girls, and (ii) boys have a greater opportunity to acquire higher education in the semi urban Gilgit town, and outside the Gilgit Agency. Therefore, accessibility to education coupled with gender bias in the labour market has restricted women's entry into the paid labour force. A similar situation has been noted in the literature, for example, according to Shield (1987) the structural, social and economic factors reinforce each other and where there is a negative combination, the women are at disadvantage. This might also be the case for women in the Gilgit Agency in the long term.

Besides, the impact of education on women's participation in the labour force, women's access to paid employment also affects fertility rate. The data in this respect indicates that the nature of a women's occupation has a greater impact on the level of fertility. For example, those respondents occupied in the agricultural sector--close to home--tend to have higher fertility level, and those who are employed in the modern sector of economy--away from home--tend to have low to medium level of fertility. Thus, the direct impact of education on the nature of employment opportunity tend to reduce the fertility rate.

In summary, it is concluded that the direct positive influence of education on participation of women in the paid labour force outside the home exists as education (i) enhances employment opportunities and income potentials; (ii) generally increases the opportunity cost of inactivity; (iii) weakens the restrictive power of cultural traditions limiting women's non-domestic activities, and finally, (iv) women engaged in the paid employment in non-domestic areas tend to have lower fertility levels than those who are engaged in the domestic and agricultural activities.

Further, it is clear from the discussion and the results that, at the individual level, educated women have a higher probability of entering into the paid labour market than the less educated. At the level of society the conclusion drawn by Standing (1976: 295) that, "the spread of education tends to create a social climate favouring female economic activity, and as women gain greater access to education and training, barriers to their employment in primary, high-income occupations tend to break down", is also applicable to women in the Gilgit Agency.

Policy Implications and Recommendations

The implications of this study for both educational policy and human resource development are clear: it is evident from the above discussion that education of females has a definite relationship with their entry into the paid work force. However, expansion of schooling only might not increase women's opportunity to enter into the paid labour force, as there are social, structural and economic factors which adversely affect women's entry into paid labour.

Moreover, like many developing countries, universal secondary education in the Gilgit Agency is not a viable option. However, unlike other developing areas in Pakistan, universal primary education in the Gilgit Agency can be achieved in the near future as most villages have a primary school for girls and enrollment rates are higher than at the national level. In light of the above discussion and results the following policy recommendations are made:

First, access to education as well as vocational training should be made available to as many girls as possible at the secondary and higher educational levels. This will gradually assist women to enter into high paying employment in areas other than teaching and nursing.

Second, major efforts should be made to ensure that girls are not automatically put into an inferior education system, preparing them only for teaching or nursing jobs. Greater efforts should be made to channel girls into the other areas of the economy such as commerce, banking, administration in education and health services, and higher education in the field of agriculture and farming. This will create a future line of administrators to fill the higher positions that are at present occupied by men.

Third, the educational system policy-makers should take into consideration providing appropriate marketable skills for those students who enter into the labour market after primary or middle school training, in order to improve their earning potentials. Most girls after middle schooling enter into unpaid family farming and some pursue secondary education through correspondence courses or through private study at home. The majority of these girls aspire to enter into teaching jobs, preparation for which takes 4-5 years. Meanwhile girls get married and their future education is disrupted. It is therefore recommended that integrated efforts in the fields of education, health and rural development programmes should be made to train these

school leavers through extension programme at the village level which would improve their skills and earning potentials.

Fourth, major efforts should be made to introduce a non-formal education system based on literacy, numeracy, agriculture, poultry and marketing of agriculture produce to provide women, many of whom are currently illiterate and semi literate, with opportunities to upgrade their skills and to increase their income in the traditional sector of economy.

Fifth, provision should be made for drop outs to reenter the education system through adult and continuing education programs to obtain an education which would improve their skills and income.

Implications for Further Research

This is the first study of its kind ever undertaken in the Gilgit Agency. As mentioned earlier the area was inaccessible and isolated from the outside world for centuries. Being located in the valleys of highest mountain ranges in the world, the area was deprived of any development programs and/or research of any kind. Therefore, several kind of research are needed to clarify many issues which were not covered by this study, but which were encountered in the course of this analysis and writing up of this dissertation. This section is devoted to identify specific areas in which further research is required.

First, with respect to education and fertility relation more studies need to be undertaken relating to education and age specific fertility rates, especially among women between the ages of 20 to 45 years. It was found in this study this age category was most appropriate to discover the relationship between education and fertility by controlling age, because women below 20 years are on the first phase of their childbearing age and those beyond 45 years presently show little variations in levels of schooling.

Second, the study was focussed only on female education and its impact on various aspects of their lives. Male education and husband's attitudes on various issues such as attitudes towards family size, family planning methods and women's work outside home were not studied. Thus, it is suggested that more studies must be undertaken to explore the husbands' level of education, income and attitudes toward these issues. Such studies

will help to establish the pattern of change in fertility and women's entry into the paid labour force as per level of husband's education.

Third, as the area is basically rural (though Gilgit town may be considered as semi urban center), this study has not taken into account urban-rural differences in assessing any hypotheses. Thus, a study differentiating the impact of education on fertility, mortality and participation in labour force in the urban and rural areas is needed to establish the behavioural pattern of women's education on a number of these variables.

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Appendix I
Cross-Tabular Studies on Age-Adjusted Fertility of the Educated and the Uneducated

Study Date Published	Location	Illiteracy Rate (%)	Data Source (Sample Size)	Characterisics	Direction of Relation
Amani (1971)	Iran	(F) 88 (1966)	1971 Tehran (1,338)	(F)	Inverse
Dow (1971)	Sierra Leone	(A) 73 (1968)	1969-70 Survey (5,962)	(F) Total	inverse
				(F) Freetown	inverse
				(F) Towns	direct
				(F) Villages	inverse[c]
Ekamen (1974)	Nigeria	(A) 89 (1952- 53)	1971-73 rural (745)	(F)	inverse
Goldstein (1972)	Thailand	(F) 44 (1960)	1960 Census	(F)	inverse
Rule (1963)	India	(F) 87 (1961)	1956 rural (2,380)	(F)	inverse[c]
				(M)	inverse
Stycos and Weller (1967)	Turkey	(F) 73 (1965)	1963 urban and rural (2,700)	(F) Urban	inverse
				(F) Rural	inverse
Yaukey (1963)	Lebanon	(F) 14 (1971)	1956 urban (613)	(F) Christian	inverse
				(F) Moslem	inverse
World Fertility Survey (1977)	Nepal	(F) 93.8 (1976)	1976 national (5,6665)	(F) Married 0-5 years	inverse
				(F) Married 5-9 years	direct
				(F) Married 10-15years	direct

Note: (F) = education of Women; (M) = eduation of men; (A) = education of adults.
a. Survey are identified by the date, area studied, and sample size
b. Relations are secified by the characterisics of samples reported, sex, residencce and employment.
c. Size of one group is too small for meaningful comparision.

Adapted from Cochrane, S. H. Fertility and Education What Do We Really Know. World Bank Staff Occational Papers, No. 26. London and Baltimore: The John Hopkins University Press, 1979: 34.

Appendix II

Cross Regional Studies, Arranged by Methodology Used

Date	Study (date published)	Location	Age control	Control for degree of urbanization	Direction of relation
	Simple correlationn				
	Merrick (1974)	Brazil	x	None	inverse[c]
	Stycos (1968)	Argentina	x	urban	inverse
		Bolivia	x	rural	inverse
		Chile	x	urban	direct[b]
		Colombia	x	--	inverse
		Costa Rica	x	urban	inverse
			x	rural	inverse
		Gautemala	x	urban	inverse
			x	rural	direct
		Honduras	x	urban	direct
			x	rural	inverse
		Mexico	x	urban	inverse
			x	rural	direct
		Nicaragua	x	urban	inverse
			x	rural	direct
		Panama	x	urban	direct
			x	rural	inverse
		Venezuela	x	urban	inverse
			x	rural	direct
	Zarate (1977)	Mexico	x	urban	inverse[a]
	Caldwell (1968)	Ghana	x	urban	inverse[c]
	Multiple Regression				
	World Bank (1977)	India		--	inverse[c]
	Schultz (1969)	Puerto Rico		--	inverse[c]
	Drakatos (1969)	Greece	x	--	inverse[c]
	Li (1970)	Taiwan	x	cities	inverse[c]
				urban towns	inverse[c]
				rural towns	inverse[b]

Multiple Regression (Cont.)				
Hicks (1974)	Mexico (States TFR)	x	--	direct[c]
	children ever born (rural)	x	rural	direct[a]
	children ever born (states)	x	--	direct[a]
Schultz (1972)	Taiwan	x	(M)	inverse[c]
		x	(F)	direct[c]
	(adjusted for multi-collinearity)	x	(M)	inverse[c]
			(F)	inverse[c]
Ben-Porath (1973)	Israel		(Jewish towns)	
		x	(M)	direct[c]
			(F)	inverse[c]
			(Jewish rural)	
			(M)	inverse[c]
			(F)	inverse[c]
			(Kibbutzim)	
			(M)	direct[a]
			(F)	direct[a]
			(Non-jewish, urban)	
			(M)	direct[c]
			(F)	inverse[c]
Schultz (1972)	Egypt --inter-mediate schol children under 5	x	--	direct[c]
	children 5-9	x	--	direct[a]
Cochrane (1978)	Thailand (1960)	x	--	direct[c]
	(1970)	x	--	direct[c]
	change between 1960 and 1970	x	--	inverse[b]

Note: (F) = education of Women; (M) = eduation of men;
a. Not significant.
b. Significant in less than 50 percent of the cases.
c. Significant or sifnificant in more than 50 percent of the cases.

Adapted from Cochrane, S. H. Fertility and Education What Do We Really Know. World Bank Staff Occational Papers, No. 26. London and Baltimore: The John Hopkins University Press, 1979: 24-25.

Appendix III:Variables

Table 5.1
Definitions of the Independent and Dependent variables

A Independent Variables

Education	Number of years of schooling
Age	Age of respondent in years

B Dependent Variables

Fertility:	
Total fertility	Number of live births
Family Size	
Actual family size	Number of children alive
Desired family size	Additional number of children desired
Ideal family size	Number of children preferred as completed family size
Contraception:	
Contraception:	Attitudes towards modern contraceptive methods
Knowledge	Knowledge of modern contraceptive methods
Use	Use of modern contraceptive methods
Child Mortality:	
Child Mortality	Number of children died.
Self-Care	Knowledge of self-care during pregnancy
Child-care knowledge	Knowledge of child-care practice
Immunization	Number of children immunized
Labour force participation	
Women's occupation	Number of women employed in traditional and modern sector of economy
Women's income	Women's differential earnings

Appendix IV: The Questionnaire
Part I

Household Questionnaire

---

1. I would first like to ask a few questions about the people who live with you.
   (a) How many people live in this house with you?
   [Enter number as given] _____
   (b) What are the names of the people living here and how are they related to the head of the family? **[Enter this information in the household record form]**
   (c) Who is the head of the family? Specify _____

2. What is the educational background of all the people living here? Let us start with head of the household:
   (a) How much education do you have? **[Circle the grade number]**
   [1] No education
   [2] Elementary (completed grade 1, 2, 3, 4.)
   [3] Middle school (completed grade 5, 6, 7.)
   [4] High school (completed grade 8, 9, 10.)
   [5] Post-secondary school (completed grade 11, 12.)
   [6] Other (specify) _____

   [If the answer to the above question is [1] then ask question 2b].
   (b) Did you receive any kind of adult education, non-formal, vocational or agricultural extension education?
   yes [ ] No [ ]
   [If yes, ask: Q 2c]
   (c) What kind of non-formal education or training did you receive?
   Specify _____

   Enter information about educational background of all the members of the respondent's household in the Household Record Form II]

3. Would you tell me some of the facilities in this household? **(Determine the availability of these facilities in the village/ community before asking the following questions).** For example,
   (a) Do you have electricity? Yes [ ] No [ ]
   (b) Do you have piped (tap) water here? Yes [ ] No [ ]
   (c) Do you have access to flush toilet? Yes [ ] No [ ]
   [If yes for 3.(c), ask:]
   (d) Is the toilet for this household private or communal?
   Private [ ] Communal [ ]

(e) Do you have in this household any of the following?

Radio	_____	Sewing Machine	_____
Tape recorder	_____	Television set	_____

4. Which religion is practised by the family?
   Islam [ ] Hinduism [ ] Buddhism [ ]
   [If Islam, ask:]
   Which sect of Islam? Sunni [ ] Shia [ ] Shia Ismailis [ ]

5. Which language is normally used by the members of the household?
   Urdu [ ] Brushaski [ ] Other(s) specify _____

6. Do you have a family farm, ? Yes [ ] No [ ]
   [If yes, ask:]
   (a) What is the size of your farm? Specify _____.
   (b) What kind of other property this household possess?
   Specify _____

7. What was the average monthly income during the last twelve months?
   Average monthly household income (Rs) _____
   (a) what is the main source of the household income?
   Specify _____
   (b) What are the other sources of the household income? Indicate each source and its contribution in the household income.

Source	Income in Rs.	Source	Income in Rs.
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

8. Could you tell me some thing about the work experience of each member of this household? **[Enter this information in the household record form III]**
   (a) How many people in this family are in the working including younger members? (specify numbers) _____
   (b) What kind of work is each doing?

Name	Kind of work	Name	Kind of work
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Part II

Core Questionnaire

GENERAL INFORMATION

House Reference Number _____ Birth Date _____

Respondent's Reference number _____ Marital Status _____

I EDUCATIONAL BACKGROUND

1. Can you read and write?
   Read Yes [ ] No [ ]
   Write Yes [ ] No [ ]
   Which languages? Specify _____
   (a) Did you ever attended formal school? Yes [ ] No [ ]
   [If no, skip to Q. 2]
   (b) How much education do you have? **[Circle the grade number]**
   [1] Elementary (completed grade 1, 2, 3, 4.)
   [2] Middle school (completed grade 5, 6, 7.)
   [3] High school (completed grade 8, 9, 10.)
   [4] Post-secondary school (completed grade 11, 12.)
   [5] Other (specify) _____

2. Did you receive any kind of adult education or vocational training?
   Yes [ ] No [ ]
   [If yes, ask Q. 2a] [If No, ask Q. 3]
   (a) What kind of adult education or training apart from formal schooling have you received? Specify _____

3. Did you ever attend Mosque school, Madresah or Mohallah school?
   Yes [ ] No [ ]
   [If yes, ask Q.8a] [If no, ask Q 8b]
   (a) What did you learn in this school? Specify (e.g., reading Holy Qur'an)

   _____ _____
   _____ _____
   _____ _____

   (b) Did you ever attend any literacy programme in your village?
   [Determine the availability of literacy programme before posing the question]
   Yes [ ] No [ ] **[If no, ask Q. 3c]**
   (c) Why? Give reason for not attending literacy programme?
   (Specify) _____

II MARRIAGE AND FERTILITY

4 Are you married? Yes [ ] No [ ]
[If no, skip to Q.]

(a) By whom was decision regarding your marriage made?
By my father/grandfather 1
By my parents 2
By my parents and me 3
By me alone 4

(b) How old were you at that time of your marriage?
completed years _____.

(c) How old was your husband at that time?
completed years _____.

(d) Is this your first marriage?
Yes [ ] No [ ]
[If yes, skip to Q. 5] **[If no, ask:]**

(e) How many times have you been married? Specify _____

5. Have you ever had any children?
Yes [ ] No [ ]
If yes, ask Q. 5a] [If no, skip to Q. 7a]

(a) How many of your children are now alive?
Total children living _____
Boys _____ Girls _____
[For each living child, ask name and age and record responses in pregnancy record form I]

III INFANT MORTALITY

6. Have you had any other children who were born who are dead?
Yes [ ] No [ ]
[If yes, ask:] **[If no, skip to Q. 7d]**

(a) How many children? _____
[For each child who has died, ask Q. 18b-18e and enter information in Pregnancy Record Form II]

(b) When was your first deceased child born? Which month and year?

(c) Was it a boy or girl?

(d) When did he (she) die? **[If date cannot be obtained, ask:]**
How old was he or she when he or she died?
Completed years _____
[If age at death is not specified, inquire and check one of the following]
i Was he(she) less than 1 year?
ii Between 1 and 5 years?
iii More than 5 years?

(e) What was the cause of the death?

Illness(specify _____	1	Accident	3
Malnutrition	2	Other(specify)_____	4

7. Have you had any pregnancies that did not result in a live birth?
   Yes [ ] No [ ]
   [If yes, ask Q 9a-c] [If no, skip to Q. 9d-e]

   [For each fetal death ask Q.7a-7e and enter in proper order in Pregnancy Record Form II]
   (a) How many such pregnancies there have been?
   Specify numbers _____
   (b) When did the first (second, etc..) occur? In what month and year?
   _____month, _____year
   (c) Was it a miscarriage or a stillbirth?
   (d) Have you had any abortions?
   yes [ ] No [ ]
   If yes, ask:] [If no, skip to Q. 8]
   On how many occasions? (specify number) _____
   [Enter this information in Pregnancy Record Form III, check all the information about death, still births and abortion in PRC form]
   (e) What are your feelings about abortion?
   [1] Strongly disapprove [2] Disapprove [3[Uncertain
   [4] Approve [5] Strongly approve

8 Are you expecting a baby now?
   Yes [ ] No [ ] Uncertain [ ]
   [If yes, ask:] **[If no or uncertain, skip to Q. 23]**
   (a) In what month of pregnancy are you?
   specify _____
   (b) Have you had medical check-ups during each of your pregnancies?
   Yes [ ] No [ ]
   [If yes, ask: Q 8c] **[If no, ask Q 8d]**
   (c) On how many occasions? Specify here _____
   (d) Why ? Give your reason(s):

Lack of time	1	It is too far	2
It is too costly	3	I had no problem	4
It is not necessary	5	I did not know	6

   (c) How do you feel about taking care of your own health during and a after pregnancy? Explain in your own words.

   _____

   _____

   _____

IV CHILDCARE PRACTICES

9 Is there a medical center in this village?

Yes [ ] No [ ]

[If yes, ask:] **[If no, skip to Q. 27]**

(a) Have you ever visited the medical center in your village concerning your child (children)'s health?

Yes [ ] **No [ ]**

[If yes, ask Q. 9b] **[If no, ask: 9c]**

(b) For what purpose(s)?

Illness	1	Accidents	4
General checkups	2	Vaccination	5
Nutritive food/medicine	3	Other_____	6

(c) Why? Give reason(s)

Lack of time	1	It is too far	4
It is too costly	2	They had no problem	5
It is not necessary	3	I did not know	6

10. Have you had your child (children) vaccinated?

Yes [ ] **No [ ]**

[If yes, ask Q. 10a - d] **[If no, ask Q. 10e]**

(a) Kind of vaccine 1

(b) Started at the age 2

(c) Number of shots completed 3

(d) Number of shots to be completed 4

[For each child's medical care history ask Q. 9 -10 and enter into medical report form.]

(e) Why? Give reason(s):

Lack of time	1	The center is too far	4
It is too costly	2	They had no problem	5
It is not necessary	3	I did not know	6

11. What is your opinion about giving nutritive food and medical care to your children?

V FAMILY PLANNING

12. Now I want to ask about families and their welfare. For example, in your case do you want to have any (more) children?

Wants more [ ] Uncertain [ ] Does not want any more [ ]

[If Respondent (R) does not want more children, skip to Q. 13]

(a) How many more do you want to have?

Specify number _____

(b) Among these children, how many boys and how many girls do you want to have? Specify number_____,

boys_____, girls_____, no preference _____.

13. When you (first) got married, did you want to have your first child as soon as possible, or after some delay?

As soon as possible [ ] After some time [ ] Did not care [ ]

14. what do you think is the ideal number of children for a family to have? Specify number _____

15. How do you feel about using family planning method to have just the number of children you want, and have them when you want to them? Would you say that you approve, disapprove or feel uncertain about this?

Approve [ ] **Disapprove [ ]** **Uncertain [ ]**

[If approve, ask Q. 15a] **[If disapprove or uncertain ask Q.15b]**

(a) Give your reason(s) for approval (specify).

_____ _____
_____ _____
_____ _____
_____ _____

(b) Give your reason(s) fro disapproval (specify).

_____ _____
_____ _____
_____ _____
_____ _____

16. What does your husband think of married couples using family planning method to prevent or delay a pregnancy? Does he approve or disapprove?

Approves [ ] Disapproves [ ] Depends [ ] Don't know [ ]

17. Do you know anything about family planning or methods of contraception that are used by married couples to delay or prevent a pregnancy?

Yes [ ] No [ ]

[If yes, ask Q.18a -b] **[If no, skip to Q. 18c]**

(a) What methods have you heard about? specify _____

(b) Have you heard about these methods from:

Friends or relatives?	Yes [ ]	No [ ]
Family planning workers?	Yes [ ]	No [ ]
A doctor?	Yes [ ]	No [ ]
A pharmacy?	Yes [ ]	No [ ]
Other medical personnel?	Yes [ ]	No [ ]
A teacher?	Yes [ ]	No [ ]

Other (specify)_____

(c) Would you like to learn about family planning method to delay plan the spacing or to limit the number of your children?

Yes [ ] No [ ]

[If yes, ask Q. 19]

18. Have you and your husband ever used family planning method to plan the spacing or to limit the number of your children?

Yes [ ] No [ ]

[If yes, ask: Q. 19a -d] **[If no, skip to Q. 20]**

(a) When did you start using the first method? Was it right after marriage, before the first pregnancy, or after which pregnancy was it?

Right after marriage [ ] Before the first pregnancy [ ]

After first, second, etc. pregnancy (specify) _____ [ ]

(b) Are you currently using contraceptive or family planning method?

Yes [ ] No [ ]

[If yes, skip to Q. 19c] **[If no, ask: Q. 19d]**

(c) What method is that?_____

(d) Have you used any method since your last pregnancy?

Yes [ ] No [ ]

[If yes, ask Q. 19e] **[If no, skip to Q. 20]**

(e) What method is that? _____

19. Do you expect to use family planning methods sometime in the future?

Yes [ ] No [ ] Uncertain [ ]

[If yes, ask Q. 20a] **[If no or uncertain, skip to Q. 20b]**

(a) How many (more) children do you think you will have before you start using contraception?

Number _____ Expect to begin right away_____

(b) Why? Give your reason(s).

_____ _____

_____ _____

_____ _____

_____ _____

VI LABOUR FORCE PARTICIPATION

20. Now apart from housekeeping some women work on a farm, in a business, for relative, for someone else, or for themselves. I should like to ask you some questions about your work experience. For example, did you work before you were married?

Yes [ ] No [ ]

[If yes, ask Q.21a - e] **[If no, skip to Q 22]**

(a) What kind of work did you do?
Kind of work _____

(b) Was this work agricultural of non-agricultural?
Agricultural [ ] Non-agricultural [ ]

(c) Did you work at home or away from home?
At home [ ] Away from home [ ]

(d) Was this work in family enterprise?
Yes [ ] No [ ]

(e) What was your average monthly income?
Income in Rs. _____

21. Are you working at present?

Yes [ ] **No [ ]**

[If Yes, ask Q. 22b -g] **[If no, skip to Q. 22a]**

(a) Have you ever worked since you were first married
Yes [ ] **No [ ]**
[If yes, ask Q. 23]

(b) What kind of work are you doing?
Agricultural (specify)_____
Non-agricultural (specify)_____

(c) Where did you work?
At home _____ Away from home _____

(d) Do you work for yourself or for your family, or someone else?
[Probe employment status and check one of the following:]
Employer [ ] Unpaid family work [ ]
Employes [ ] Member of producer's cooperative [ ]
Own account [ ] Not classifiable by status [ ]

(e) How long have you been doing this work?
Completed years _____ Months _____

(f) How many years in all have you worked since you were first married?
Completed years _____ Months _____

(g) What is your average monthly income now?
Income in Rs._____

22. How many years in all have you worked since you were first married?
Completed years _____ Months (if under one year)_____

(a) What kind of work did you do when you last worked?

Kind of work _____

Is this work agriculture of nonagricultural

Agricultural _____ Non-agricultural _____

(b) Where did you work?

At home _____ Away from home _____

(c) Do you work for yourself, or for your family, or someone else?

[Probe employment status and check one of the following:]

Employer [ ] Unpaid family work [ ]

Employees [ ] Member of producer's cooperative [ ]

Own account [ ] Not classifiable by status [ ]

(d) Do you work in a family enterprise?

Yes [ ] No [ ]

(e) Was this work in agriculture or outside agriculture

Agricultural _____ Non-agricultural _____

(f) What was your monthly average income?

Income in Rs. _____

THIS IS THE END OF THE INTERVIEW. THANK YOU VERY MUCH FOR YOUR YOUR TIME AND CO-OPERATION.

Appendix V
Household and Village Record Forms

HOUSEHOLD RECORD FORM I

No.	Name	Relation-ship to head of household	Sex F M	Age Yrs	Marital status
1		Head			
2		Spouse			
3					
4					
5					
6					
7					
8 9 10					

HOUSEHOLD RECORD FORM II
EDUCATION LEVEL

Name	Sex F M	No Educ.	Primary Educ.	Middle School	High School	Pre Univer.	Univer sity

HOUSEHOLD RECORD FORM III
(OCCUPATION)

Name	Sex F M	Employer	Employee specify	Own account	Unpaid family worker	Other occupation specify

PREGNANCY RECORD FORM

Pregnancy order	Sex F M	Age Yr Mo	Birth date Mo Year	Age at death	Cause(s) of death	Fetal Deaths Miscarriage, Stillbirth (s)

PROFILE OF THE VILLAGE

Variables	Village no.1	Village no. 2	Village no. 3	Village no. 4
Population: Males Females Boys(under 15) Girls(Under 15)				
Religion practiced Sunnis (%) Shias Shia Ismailis				
Total area in Km.				
Accessibility . to Gilgit town . to regional market . to nearest village				
Transportation . walk . bus . truck . bicycles . no paved roads . other				
Communications . post office . telegraph . telephons . other				
Educational facilities . schools- Primary middle high teacher training other				

Modern health services . health center . minor medical center . hospital . family planning clinic . other				
Source of drinking water . springs . rivers . wells . pipe lines . glaciers				
Electricity				
Media . radio . Television				
Irrigation . from wells . from canals . form other sources				
Major economy . agriculture . poultry . forestry . food processing . other				
Organizations . AKRSP . AKES . AKHS . VILLAGE ORGN. . WOMEN ORGN. . BANKING . OTHER GOVT. ORGANIZATION				
population growth				
Fertility rate				

Literacy rate males females				
Infant mortality				
Labour force males females				
Enrollment rate % Elementry . girls . boys Middle . girls . boys High school . girls . boys Post-secondary . girls . boys				